

ARABIC SIGN LANGUAGE MACHINE TRANSLATION

BY

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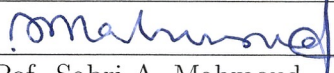
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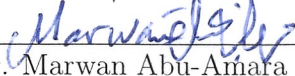
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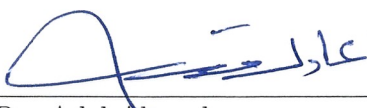

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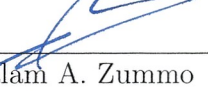
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*To the soul of my parents,
my big brother Mutaher,
my brothers and sisters,
and my wife and daughters Hajar and Sarah.*

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THESIS ABSTRACT

NAME: Hamzah Abdullah Luqman

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Arabic sign language (ArSL) is a full natural language that is used by the deaf in Arabian countries to communicate with their communities. Unfamiliarity with this language increases the isolation of deaf people from society. This language has a different structure, word order, and lexicon than Arabic. The translation between ArSL and Arabic is a complete machine translation problem because the two languages have different structures and grammars. In this work, we propose a rule-based machine translation system to translate between Arabic and ArSL. We propose a machine translation system to translate the ArSL sentences resulting from ArSL recognition systems into meaningful Arabic sentences. The proposed system performs the translation at the word, phrase, and sentence lev-

els. In addition, we propose a machine translation system to translate the Arabic sentences into ArSL. The proposed system performs morphological, syntactic, and semantic analysis on the Arabic sentences to translate them into sentences with the grammar and structure of ArSL.

We also propose gloss annotation system to transcribe ArSL. The proposed system represents ArSL signs textually and it helps in using the ArSL in educational material and signs generation.

In addition, we present a bilingual corpus consisting of 600 sentences developed in this work. The corpus contains sentences from health domain and each Arabic sentence is translated into ArSL by two ArSL experts. This corpus is divided into training (70%), validation (15%), and testing (15%). We also present a KArSL database which consists of 502 signs recorded using the state-of-art multi-modal Microsoft Kinect V2. The databases' signs are performed by four signers and each sign is repeated 50 times by each signer which resulted in 100,200 samples. The databases developed in this work will be freely available for researchers.

We evaluated our translation systems using the bilingual parallel corpus developed in this work and we found that our translation systems provide an accurate translation for more than 80% of the ArSL sentences translated into Arabic and 82% of the Arabic sentences translated into ArSL.

ملخص الرسالة

الاسم الكامل: حمزة عبدالله حمود لقمان

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لغة الإشارة العربية هي لغة طبيعية يستخدمها الصم في الدول العربية للتواصل فيما بينهم ومع مجتمعاتهم. يزيد عدم الالمام بهذه اللغة من عزلة الصم في المجتمع. تختلف لغة الإشارة العربية عن اللغة العربية في التركيب وترتيب الكلمات وكذلك في معجم الكلمات المستخدمة. تعتبر الترجمة بين اللغة العربية ولغة الإشارة العربية ترجمة كاملة في مجال الترجمة الآلية كون اللغتان مختلفتان تركيباً ونحويًا.

ولمعالجة هذه المشكلة، قمنا في هذا العمل باستخدام قواعد الترجمة لتطوير نظام ترجمة آلي بين اللغة العربية ولغة الإشارة العربية وبالعكس. يقوم النظام المقترح بإجراء تحليل شكلي ونحوي ودلالي على الجمل العربية لترجمتها إلى لغة الإشارة مع مراعاة قواعد وتركيب لغة الإشارة العربية أثناء الترجمة.

بالإضافة إلى ذلك قمنا بتطوير نظام ترجمة آلي لترجمة جمل لغة الإشارة العربية إلى اللغة العربية. يستهدف هذا النظام مخرجات أنظمة التعرف الآلي على لغة الإشارة العربية والتي تكون في الغالب عبارة عن سلسلة من الكلمات العربية الغير مترابطة والتي تمثل جملة لغة الإشارة التي تم التعرف عليها. يقوم هذا النظام بترجمة الجملة المدخلة على ثلاث مراحل: الكلمة والعبارة والجملة.

كذلك قمنا بتطوير نظام كتابي لوصف لغة الإشارة العربية. نستطيع من خلال هذا النظام توصيف إشارات لغة الإشارة العربية كتابياً والذي سيساعد في استخدام لغة الإشارة العربية بشكل أوسع في المواد التعليمية وتوليد الإشارات ... الخ.

كما قمنا بتطوير مكنز ثنائي اللغة يتكون من 600 جملة. تم تجميع جمل هذا المكنز في مجال الصحة. هذا وقم تم ترجمة كل جملة من اللغة العربية إلى لغة الإشارة بواسطة خبيران في لغة الإشارة العربية. وقد قمنا

بتقسيم هذا المكنز الى قسم للتدريب (70%) وآخر للتحقق (15%) وثالث للاختبار (15%). كما قمنا بتطوير قاعدة البيانات (KArSL) للغة الإشارة العربية والتي تتألف من 502 إشارة تم تسجيلها باستخدام جهاز Microsoft Kinect V2 متعدد الوسائط. هذا وقد قام بتسجيل قاعدة البيانات هذه أربعة اشخاص وقد قام كل شخص بتكرار كل اشارة 50 مرة والذي نتج عنه 100,200 عينة. سيتم اتاحة قاعدة البيانات هذه بالإضافة الى المكنز الثنائي التي تم تطويرهما في هذا العمل للباحثين مجاناً.

ولتقييم أنظمة الترجمة الآلية المقترحة قمنا باستخدام المكنز ثنائي اللغة المطور في هذا العمل وحصلنا على ترجمة دقيقة بين اللغة العربية ولغة الإشارة والعكس لأكثر من 80% من الجمل المدخلة.

CHAPTER 1

INTRODUCTION

This chapter provides an introductory material on machine translation of Arabic sign language (ArSL). Section 1.1 highlights the importance of machine translation systems in the recognition and translation between ArSL and Arabic. In addition, it provides an introduction to the approaches proposed for translating between ArSL and Arabic. It also provides an overview of the ArSL databases developed in this work. Section 1.2 presents the motivation of this study. Section 1.3 states the problem statement of the dissertation. Section 1.4 presents the research methodology that was followed to achieve the dissertation objectives. Section 1.5 highlights the contributions of the dissertation in the field of machine translation between Arabic and ArSL.

1.1 Machine translation between ArSL and Arabic

A large number of deaf and hearing-impaired are scattered across the globe. The hearing impaired constitute more than 5% of the world's population (360 million people), and the majority of them live in low- and middle-income countries [5].

Deaf people use sign language as the main language for communicating with their community. Sign language uses gestures and body language, such as hand shapes, lip patterns, and facial expressions, to convey meaning. It uses a dedicated sign for each word in its language vocabulary, whereas out-of-vocabulary words, such as people's names, are spelled with fingers. Facial expressions, such as eye gaze direction, eye blinks, and eyebrow, mouth, and tongue movements, are used to express emotions and feelings, such as anger [6].

Sign language is not international; it differs from one country to another [7] and occasionally within the same country. In Arabian countries, there are several sign languages, including Saudi, Yemeni, Jordanian, and Egyptian [8]. In 1999, the League of Arab States (LAS) and the Arab League Educational, Cultural and Scientific Organization (ALECSO) sought to standardize the Arabic sign language (ArSL). This effort resulted in a dictionary of approximately 3,200 words published in two parts [9].

ArSL is used mainly in the Arabic gulf countries (viz. Kingdom of Saudi Arabia, Qatar, United Arab Emirates, and Oman). Other Arabian countries are still using their local sign languages. The main Arabic media TV channels such

as Aljazeera and Alarabiya are using ArSL in translating news and programs into sign language. This helps in making ArSL more common in other Arabian countries.

ArSL is a full natural language that has structure, word order, and lexicon that differ from those of Arabic. Thus, developing a system to facilitate the communication between the deaf and hearing people requires a machine translation system as shown in Figure 1.1. This system is required to translate Arabic sentences into ArSL and to translate the sentences resulting from ArSL recognition systems into Arabic. Translation between Arabic and ArSL is challenging. This problem is a complete machine translation problem because ArSL and Arabic are two different languages with different structures and grammars. To our knowledge, the majority of available machine translation systems for ArSL performs a direct mapping between the word and its equivalent ArSL sign. This type of translation results in loss of meaning of the sentence because it ignores the structure and grammar of the target language. Thus, a machine translation system between Arabic and ArSL that preserves the structure and grammar of both languages is needed.

We propose in this dissertation a machine translation system from ArSL to Arabic. The output of ArSL recognition system is a sequence of Arabic words corresponding to the recognized ArSL sentences. The ArSL recognition systems perform direct mapping between the signs of ArSL sentences and their corresponding Arabic words which result in sentences with Arabic words with the structure of ArSL. To address this, we propose a machine translation system that converts

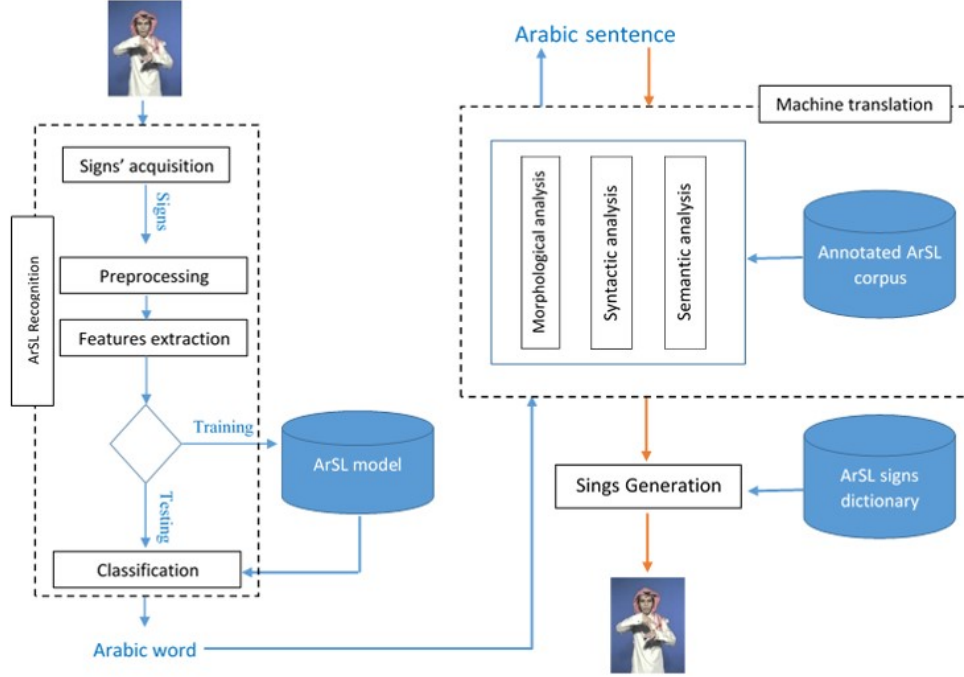


Figure 1.1: Structure of the ArSL recognition and translation system.

the sentences resulting from ArSL recognition system into Arabic sentences that meet the structure and grammar of Arabic.

The translation of Arabic text into ArSL is important for the full integration of the deaf into their communities [10]. The input text can be text-generated from speech or text recognition systems. Translation systems can be used to translate messages, addresses, and educational materials into ArSL without involving expert translators. It can also be used with smart phones by translating the incoming messages into ArSL.

We also propose a rule-based machine translation system to translate Arabic text into ArSL. The proposed system performs morphological, syntactic, and semantic analysis on Arabic sentences to translate them into sentences with the grammar and structure of ArSL. The resulting ArSL sentences are represented

using sequences of GIF images.

Machine translation systems typically require bilingual parallel corpus. The available ArSL corpora are largely at the word level and thus do not satisfy the requirements of systems that require the corpus at the sentence level. Unavailability of ArSL corpus is one of the challenges of ArSL recognition and translation. We propose in this dissertation a parallel corpus consists of 600 sentences translated into ArSL by two experts. This database can be used for machine translation. A second database, shared with another PhD dissertation, Sidig [11], is recorded using state-of-the-art Microsoft Kinect v2 and it can be used by ArSL recognition systems. This database contains 502 signs performed by 4 ArSL expert signers. Each sign is repeated 50 times by each signer which resulted in 100,200 samples (200 sample per sign). This repetition makes the database appropriate for machine learning algorithms.

1.2 Motivation

Deaf and hard hearing people form 17 million in the Arab world¹. Sign language varies across Arabic regions. An effort has been made by ALECO to standardize the sign language in the Arabic countries. This effort resulted in ArSL. ArSL is complete natural language that has its words, structure, and grammar that differ from Arabic. Thus, the ability to automate the translation between ArSL and Arabic is expected to have widespread benefits.

Based on the conducted literature survey, most of the ArSL translation tech-

niques wrongly assumed that ArSL shares the same grammar and structure with Arabic language. Hence, they used a direct translation of the signs into their equivalent Arabic words. Direct translation ignores the structure of the target language and does not preserve the meaning of the sentence. Using direct translation by these systems may be attributed to the lack of a comprehensive database for ArSL and the lack of ArSL grammar documentation. The lack of the database resulted in using different databases to evaluate the proposed techniques for ArSL machine translation. These databases are developed by different researchers and the obtained results may not be comparable. The achieved accuracy of the translation is related to the quality of the used database. A technique with low error rate achieved with one database, if used in another database, may produce high error rate. This necessitates a need for a comprehensive database for ArSL.

It is also noticeable from the conducted survey that most of the ArSL machine translation techniques evaluated their techniques by experts. Experts evaluation is usually subjective and cannot be used to compare the techniques with others.

Considering the above mentioned facts, there remains a lot to do in the machine translation of ArSL. The main aim of this thesis is to address these limitations and improve the state-of-art in the ArSL machine translation. To our knowledge, rule-based translation is not deeply studied for ArSL machine translation. Other machine techniques such as statistical require a large parallel corpus which is not available for ArSL.

1.3 Problem Statement

The problem of this dissertation can be stated as follows:

Given an Arabic sentence, how can we convert this sentence into ArSL sentence that meets the structure and grammar of ArSL. In addition, how can we convert the sequence of Arabic words resulting from ArSL recognition system that represent the recognized ArSL sentence into a meaningful Arabic sentence? Can we textually transcribe the ArSL? How can we address the challenge of ArSL database unavailability?

1.4 Research Methodology

The main objective of this dissertation is to conduct basic and applied research in machine translation between Arabic and ArSL. The following methodology is followed to carry out the main phases of the dissertation in order to achieve the dissertation objective

1. Extending the literature review of the state-of-the-art approaches related to the machine translation between ArSL and Arabic.
2. Establishing a baseline for machine translation of the sequence of Arabic words representing ArSL sentence recognized by ArSL recognition systems into Arabic.
3. Establishing a baseline for machine translation of Arabic text into ArSL.

4. Evaluating the established baselines on a parallel corpus developed in this dissertation.
5. Develop a gloss annotation system to transcribe ArSL textually.
6. Develop a benchmark ArSL database using state-of-the-art Microsoft Kinect V2 which can be used by ArSL recognition systems. We shared the work on this database with another PhD dissertation [11]. This database may be used to generate sign sequences from Arabic sentences.

1.5 Contributions of the Dissertation

This dissertation addresses the machine translation between Arabic and ArSL.

The contributions of this dissertation are summarized in the following points:

- We proposed a rule-based machine translation system to translate ArSL sentence resulting from ArSL recognition system into meaningful Arabic sentence.
- We developed a semantic rule-based machine translation system between Arabic and ArSL. The proposed system translates Arabic in the form of text into ArSL by performing lexical, syntactic, and semantic analyses on the Arabic sentence and applying a set of transformation rules to generate its equivalent in ArSL.
- We developed a parallel corpus that consists of 600 Arabic sentences translated by two expert signers into ArSL, which can be used for machine trans-

lation purposes.

- We defined a gloss annotation system for transcribing ArSL textually.
- We developed a benchmark ArSL database using state-of-the-art Microsoft Kinect V2. The database consists of 502 signs, shared the work with another PhD dissertation [11], performed by four signers and each sign is repeated 50 times by each signer. This resulted in a database consists of 100,200 samples which makes it appropriate for recognition techniques that require large number of samples such as machine learning techniques.

The remaining of this dissertation is organized as follows. In Chapter 2, we present ArSL and a brief introductory to the machine translation techniques is presented in Chapter 3. In Chapter 4, we survey the techniques used for ArSL recognition and translation. Chapter 5 presents the proposed gloss annotation system for ArSL transcribing. In Chapter 6, we present the proposed ArSL database. The proposed system for translating ArSL into Arabic is presented in Chapter 7 while the proposed system for translating Arabic into ArSL is presented in Chapter 8. In Chapter 9, we present our conclusions and directions for future research.

CHAPTER 2

ARABIC SIGN LANGUAGE

ArSL is an independent language with structure and grammar that differ from Arabic. We present in this chapter the structure and grammar of ArSL. In addition, we present the main differences between ArSL and Arabic.

2.1 Introduction

Sign language is an independent language that uses body language and gestures accompanied with facial expressions to convey meaning. Concepts are represented in sign languages using signs rather than words. Sign is made of combining simultaneously hand shapes, hands movement, palms orientation, and location of hands related to the body [12]. Sign language vocabulary set is restricted to concrete concepts but it has the ability to invent new signs as they become needed. Sign Language is a descriptive language where it describes the events and objects as they occur in nature. For example, the sign of [ينام]¹ [*ynAm*²] ”[Sleep]” in ArSL is similar to the way of sleeping as shown in Figure 2.1.



Figure 2.1: *ynAm* "Sleep" sign in ArSL

Sign languages are not international as they differ from country to another and sometimes within the same country. There are several sign languages in the world such as British Sign Language (BSL), American Sign Language (ASL), Danish Sign Language (DSL), and Japanese Sign Language (JSL) [7]. The differences between sign languages are similar to the differences between spoken languages. However, deaf from different cultures can understand the basic signs of other languages better than the hearing person who tries to understand another spoken language [12].

Arabic Sign Language (ArSL) is a full natural language with different structure, word order, and lexicon than Arabic. Several sign languages are used in Arabian countries, such as Saudi, Yemeni, Jordanian, and Egyptian [13]. All Arabic sign languages use the same alphabet signs (Figure 2.2) but differ in the majority of the other signs. In 1999, LAS and ALECSO attempted to unify these

languages into ArSL; this effort resulted in a dictionary of 3,200 signs, which were published in two parts [9]. However, that work does not cover the grammatical rules of ArSL.



Figure 2.2: ArSL alphabet signs

ArSL uses dedicated sign for each word in its vocabulary set. It uses finger spelling for out of vocabulary words such people names. To avoid repeating finger spelling with people names, deaf people usually agree to give the person a dedicated sign based on his name or a noticeable characteristic of that person such as beard and nose shape. Deaf people use one sign for all words of the same category. For example, house and apartment share the same sign. The number of signs that deaf can have is related to the education level of the deaf person and to the age of losing his hearing ability. Deaf who lost his hearing ability on advanced age can differentiate between words of the same category in contrast to deaf who lost their hearing ability on early age.

Deaf uses compound signs to describe the words that do not have a dedicated sign in the language vocabulary. For example, Figure 2.3 shows the sign of *وسيم* *wsym* "Handsome" which is a combination of *وجة* *wjp* "Face" (Figure 2.3 (a)) and *جميل* *jmyl* "Beautiful" signs (Figure 2.3 (b)).

The grammar of ArSL is not fully documented. In contrast, the grammar of other sign languages are documented since last century such as French Sign Language which has the first grammar book published by Remy Valade in 1854 [7]. The only attempt to summarize the ArSL grammar was done by [14], which is briefly described in this chapter.

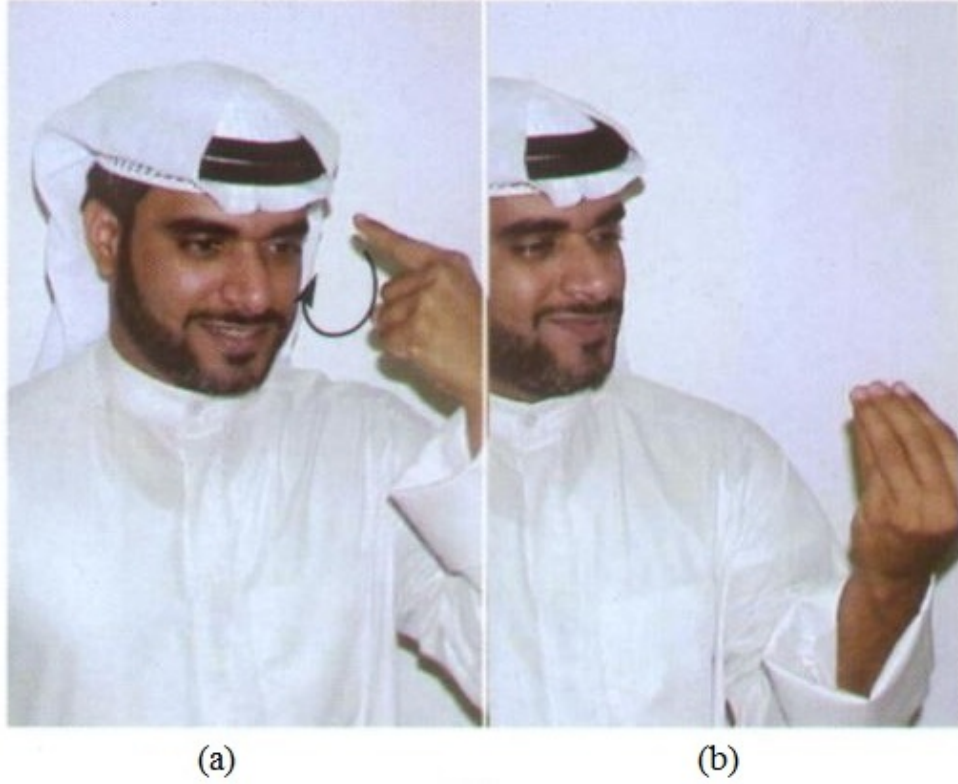


Figure 2.3: Using compound signs in ArSL for *وسيم* *wsym* "Handsome" sign. (a) *وجه* *wjɸ* "Face" sign, (b) *جميل* *jɸyl* "Beautiful" sign.

2.2 ArSL structure

ArSL and Arabic differ mainly in the word and phrase structures. ArSL grammar is poor compared with Arabic. Relative and conditional nouns, passivation, declension, and particles (e.g., some prepositions and adverbs) are not used in ArSL. Prepositions can be represented by the position and direction of one sign in relation to another sign [13]. Deaf people typically handle pronouns in long sentences by signing the name of the person in a specific location in the space and referring to that location during conversation.

The verbs and nouns in ArSL are not inflected to show the number and gender

agreement. In addition, ArSL typically uses the same sign for verb, adjective, and noun with little change in signing to differentiate a verb from a noun. Unlike Arabic, which inflects verbs and nouns to indicate the gender, while gender only appears in ArSL with nouns using a separate sign. For feminine nouns, ArSL uses the girl sign before the noun. For example, the noun *مديرة* *mdyrp* "Feminine manager" is expressed by the sign [بنت] *[bnt]* "[GIRL]" followed by the sign [مدير] *[mdyr]* "[MANAGER]."

The signs in ArSL are typically singular. Plurality is only shown in ArSL with nouns. To express dual nouns in ArSL, the sign of [اثنان] *[AvnAn]* "[Two]" is used either before the noun if it is a non-human noun or after the noun if it is a human noun. For example, the word *مدينتان* *mdyntAn* "two cities" is translated into [اثنان] [مدينة] *[AvnAn] [mdynp]* "[TWO] [CITY]" whereas the word *رجلان* *rjlAn* "two men" is translated into [اثنان] [رجل] *[rjl] [AvnAn]* "[MAN] [TWO]."

To express plurality in ArSL, the sign is repeated or the sign of [ثلاثة] *[vlAvp]* "[THREE]" is used after the noun if it is related to human; otherwise, the [كثير] *[kvyr]* "[MUCH]" sign is used.

In Arabic, sentences can be divided into verbal and nominal sentences. A verbal Arabic sentence begins with the verb and can have one of the following structures: VSO (Verb-Subject-Object), VOS, VO, or VS. Nominal Arabic sentence begins with the subject and can have the SVO or SOV structure, but the SVO order is used as the main word order in nearly all Arabic dialects [15]. In contrast, in ArSL, a sentence begins with the subject [14]. The verbal and nom-

	Arabic language	ArSL
1	<p>الطبيب يجري عملية جراحية</p> <p><i>AlTbyb yjry Emlyp jrAHyp</i></p> <p>Doctor is doing surgery</p>	<p>[الان] [الطبيب] [عمل] [عملية جراحية]</p> <p><i>[AlAn] [AlTbyb] [Eml] [Emlyp jrAHyp]</i></p> <p>[NOW] [DOCTOR] [DOES] [SURGERY]</p>
2	<p>انقذ الغريق جمهور غفير من المواطنين</p> <p><i>Ang* Algryq jmhwr gfyrr mn AlmwATnyn</i></p> <p>The sank person is saved by a large number of citizens</p>	<p>[قبل] [ناس] [كثير] [ساعد] [شخص] [غرق]</p> <p><i>[qbl] [nAs] [kvyrr] [sAEed] [\$xS] [grq]</i></p> <p>[BEFORE] [PEOPLE] [MANY] [HELP] [PERON] [SINK]</p>
3	<p>كتاب من اخذت ؟</p> <p><i>?ktAb mn Ax*t</i></p> <p>Who is the owner of the book that you took ?</p>	<p>[؟] [انت] [اخذ] [كتاب] [من]</p> <p><i>[?] [Ant] [Ax*] [ktAb] [mn]</i></p> <p>[?] [YOU] [TAKE] [BOOK] [WHO]</p>

Figure 2.4: Arabic sentences with their corresponding ArSL sentences

inal Arabic sentences are mapped into the SVO or SOV structure in ArSL, but the first structure is the most common because ArSL exists in a dialectal environment, which uses SVO as the main word order. Figure 2.4 shows examples of Arabic sentences with their corresponding ArSL sentences. As shown in the examples, Arabic sentences have the SVO, VOS, and OVS structures, whereas the ArSL sentences use the SVO structure.

Unlike Arabic, ArSL does not use tense or aspect with verbs. The sentence tense appears in ArSL if the time of the sentence is important; otherwise, the present tense is used. The verb tense (past, present, and future) in an ArSL sentence is expressed using time signs, which are typically placed at the beginning of the sentence while the verb sign is used in its present tense form. A time sign, such as [قبل] *[qbl]* "BEFORE" is used for past verbs, whereas signs such as [الان] *[AlAn]* "NOW" or [مازال] *[mAzAl]* "STILL" are used for present continuous verbs. For future verbs, the [بعد] *[bEd]* "AFTER" or [قريبا] *[qrybA]* "SOON" sign is used. A sentence that contains more than one verb with different tenses is expressed in ArSL by a spatial principle using an imaginary line called the time



Figure 2.5: Time line in ArSL

line, which represents different moments in time. This line begins from the back of the body to represent the past, whereas the front of the signer represents the future (Figure 2.5).

Command sentences are expressed in ArSL by placing the pronoun at the beginning of the sentence, followed by the main verb of the sentence. Words such as [لازم] [*lAzm*] "[MUST]" are used to indicate that this action is compulsory. For example, the Arabic sentence اذهب الى الطبيب *A*hb AlY AlTbyb* "Go to the doctor" is translated into ArSL as [انت] [*Ant*] [لازم] [*lAzm*] [*hAb] [طبيب] [*Tbyb*] "[YOU] [MUST] [GO] [DOCTOR]."

A question in ArSL begins with a question mark sign followed by the sentence, and the question word sign is allocated at the end of the sentence. Some deaf individuals use the question sign at the end, but this approach is uncommon [14].

In addition, some question words are replaced by other words in ArSL; for instance, لماذا *lmA *A* "why" is replaced by [سبب] *[sbb]* "[REASON]". The negation in ArSL is expressed using the negation sign placed at the end of the chunk. Negation signs in ArSL are limited to the [لا] *[lA]* "[NO]", [أبدا] *[AbdA']* "[NEVER]", and [لا يوجد] *[lAywjd]* "[NOT EXIST]" signs. For example, the Arabic sentence لم اجري الفحص *lm Ajry AlfHS* "I did not do the checkup" is translated into ArSL as [انا] *[AnA]* [فحص] *[fHS]* [لا] *[lA]* "[I] [CHECKUP] [NO]". It is also common in ArSL to use facial expressions to express negatives and interrogations, such as raised eyebrows with head and shoulders leaning forward.

Arabic time modifier words, such as قبل *qbl* "before" and بعد *bEd* "after" which are typically placed before the time words, are moved to after the time signs in ArSL. For example, the Arabic phrase بعد الاجازة *bEd AlAjAzp* "after vocation" is translated into [بعد] *[bEd]* [إجازة] *[AjAzp]* "[VOCATION] [AFTER]". The emphasis in ArSL appears through sign repetition. For example, the Arabic sentence انا تكلمت مرارا وتكرارا *AnA tkmt mrArA wtkrArA* "I spoke again and again" is translated in ArSL as [انا] *[AnA]* [كلام] *[klAm]* [كلام] *[klAm]* [كلام] *[klAm]* "[I] [TALK] [TALK] [TALK]". Table 2.1 summarizes the main differences between Arabic and ArSL.

2.3 Conclusions

Sign language is the main communication medium used by the deaf. Sign language is not international and there are many sign languages in the world. ArSL is

Table 2.1: Differences between Arabic and ArSL

	Arabic	ArSL
1	SVO	SVO or SOV
2	VOS	SVO or SOV
3	VS	SV
4	VSO	SVO or SOV
5	SOV	SVO or SOV
6	OSV	SVO or SOV
7	<i>Question word</i> + [Arabic Sentence] ?	? + [ArSL sentence] + <i>Question word</i>
8	<i>Negation</i> + [Arabic Sentence]	[ArSL Sentence] + $\begin{cases} \text{لا يوجد} [L'Aynjd] \text{ "[NOT EXIST]"} \\ \text{أبداً} [AbdA] \text{ "[NEVER]"} \\ \text{لا} [L] \text{ "[NO]"} \end{cases}$
9	$\begin{bmatrix} \text{قبل} [qbl] \text{ [BEFORE]} \\ \text{بعد} [bEd] \text{ [AFTER]} \end{bmatrix} + \text{Time words}$	$\text{Time words} + \begin{bmatrix} \text{قبل} [qbl] \text{ [BEFORE]} \\ \text{بعد} [bEd] \text{ [AFTER]} \end{bmatrix}$
10	Dual nouns	Gender + [Noun] + [اثنان] [AvnAn] "[TWO]" (Human) [اثنان] [AvnAn] "[TWO]" + Gender + [Noun] (Non-human)
11	Plural nouns	Gender + [Noun] + [ثلاثة] [vAvp] "[THREE]" (Human) Noun + [كثير] [kvyr] "[MUCH]" (Non-Human)
12	Relative nouns	na
13	Condition nouns	na

one of the sign languages which are used in the Arabian countries. ArSL is an independent language with structure, grammar, and vocabulary that differ from Arabic. This chapter covered the structure and grammar of ArSL and presented the main differences between ArSL and Arabic. ArSL differs mainly from Arabic in the word and phrase structures but they share the Subject-Verb-Object word. In contrast to Arabic, ArSL does not inflect nouns and verbs to show the gender and number of the subject.

CHAPTER 3

MACHINE TRANSLATION

Machine translation (MT) is a branch of computational linguistics that uses computer in automatic translation of text or speech from one human language into another. Research in the area of machine translation of spoken languages goes back to the late 1940s with a dramatic improvement in the late 70s and 80s [16]. However, the development in the area of sign language machine translation did not follow the same level of improvement. The emerge of sign language machine translation of non-Arabic languages may be dated back to the beginning of 1990s due to the late linguistic analysis of sign languages [17]. However, the development in the field of sign language machine translation followed the spoken language machine translation [17]. The development of ArSL machine translation started just few years ago. The currently available ArSL translators are still in their infancy and perform sign-to-word translation.

3.1 Machine translation approaches

There are four main paradigms of machine translation: rule-based, corpus-based, hybrid-based, and neural machine translation [18]. These types are shown in Figure 3.1.

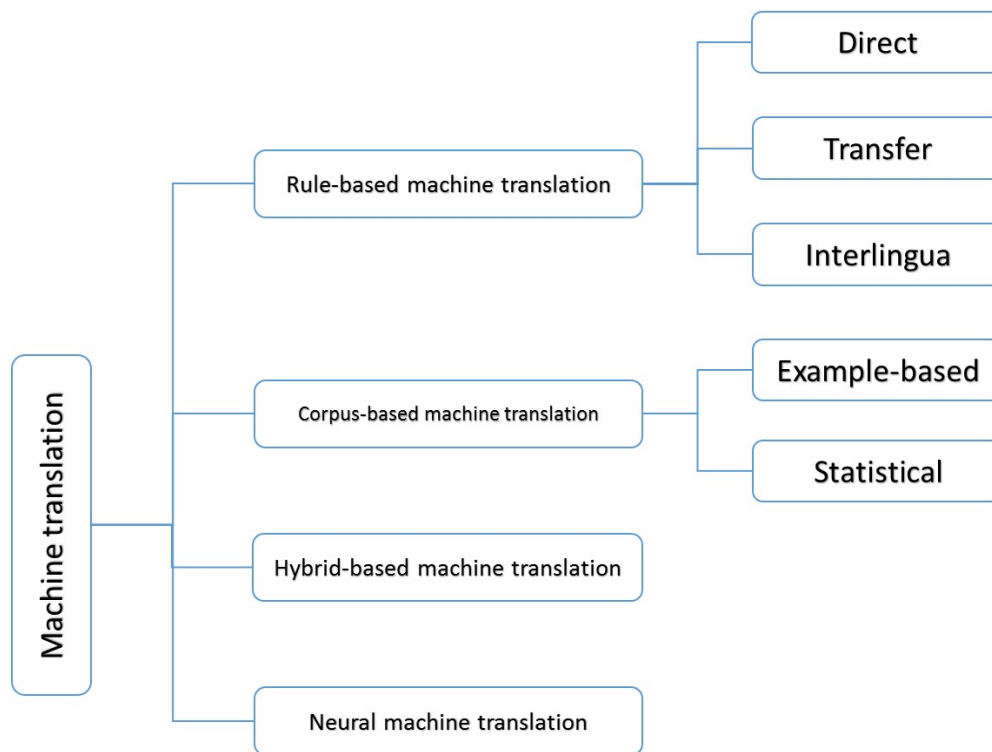


Figure 3.1: machine translation categories

3.1.1 Rule-based Machine Translation

The rule-based machine translation (RBMT) or second generation machine translation started in the late 70s and 80s with the introduction of some systems like Meteo and Systran [19] [17]. RBMT applies the linguistic rules developed by language experts for the languages involved in the translation. This approach translates the source language by first parsing the input text to generate the parse tree

that is used to generate the target language. The translation involves performing morphological, syntactic, and semantic analysis's on the input text [20]. RBMT systems are based on the syntax and semantics of the languages involved in the translation that can produce nearly correct translation [21]. However, building the translation rules is not a trivial task for open vocabulary and domain translations.

RBMT is not scalable where adding new languages requires adding their manually crafted rules. In addition, it has poor runtime performance and improving the system requires modifying the rules which require more linguistic knowledge [20]. However, The accuracy of the output can be enhanced if the translation is limited to a particular domain [21].

RBMT approaches can be divided into three categories: direct, transfer-based, and interlingua-based. These approaches can be visualized using the Vauquois triangle, also called the Vauquois pyramid [22] [2] shown in Figure 3.2.

Direct translation

Direct translation was first initialized by IBM [23]. This type of translation replaces each word in the source language text with its equivalent in the target language. It preserves the word order of the source language text without considering the variations in structure and grammar of the target language that makes the resulting text difficult to understand [23].

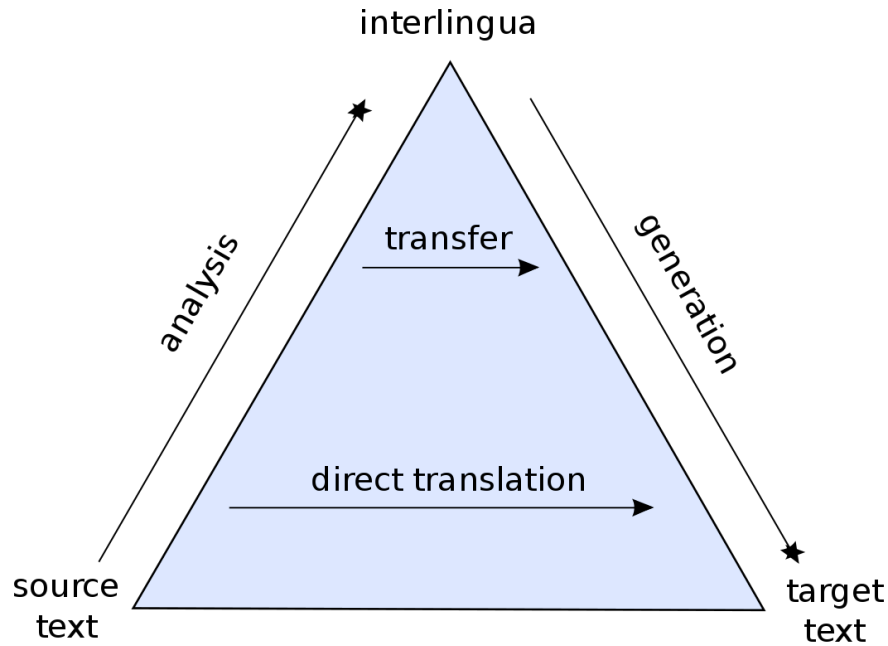


Figure 3.2: Vauquois pyramid [2].

Transfer translation

As shown in Figure 3.2, transfer-based machine translation lies between direct and interlingua translation approaches. In transfer-based machine translation, a deeper analysis of the input sentence is performed than direct translation but shallower than Interlingua approaches. It aims to overcome the structure differences between the source and target languages by providing syntactically correct target language text [20]. This type of translation depends on a set of rules for source-language/target-language pair translation. These rules transform the source-language representations (e.g. SUBJECT, OBJECT) into suitable target-language syntactic representations [23].

Transfer-based machine translation has three stages: analysis, transfer, and

generation. First, the source language text is analyzed to extract its grammatical structure. The output of this stage is a parse tree which is transferred into its equivalent tree in the target language using the transfer rules. Finally, the text of the target language is generated in the generation phase.

Transfer translation accommodates more complex translations than direct translation approach and it handles the ambiguities that carry over from one language to another [23]. However, this type of translation requires monolingual grammars of the languages involved in the translation which is costly in time and effort for translation between open vocabulary languages [17].

Interlingua translation

This type of translation performs deep semantic analysis of the source text in order to translate it into target language. It extracts the meaning of the source language sentence and expresses it in a language-independent intermediate representation that makes it possible to translate into the target language. This representation can be used to generate multiple target languages. State-of-the-art interlingua approaches depend most commonly on morphological, syntactic, and semantic rules and result in higher accuracies than comparable linguistic methods [20].

Interlingua translation consists of three steps: analysis, transfer, and generation [24]. The first stage is to convert the source text into source dependent representation with the help of parser [25]. It is then transferred into target-language representation using transfer rules. This representation is used to generate the target text after performing the necessary morphological processes.

This approach results in losing the style and emphasis of the source language text because interlingua representations are independent of the source text. This makes this approach take the form of rephrasing rather than translation when generating the target language text [23]. Additionally, Interlingua approaches require significant time for creating the internal representation by linguists [26].

3.1.2 Corpus-based machine translation

Corpus-based machine translation (CBMT) was developed to address the scalability issue of RBMT [27]. CBMT, also known as knowledge-based approach, relies on machine learning algorithms in translating the input text based on the previous translations. This type of translation uses parallel corpus as a main source of knowledge in the translation. CBMT requires an enormous bilingual corpus to achieve the translation.

CBMT and hybrid approaches are the more translation approaches used recently [21]. However, CBMT could not solve some problems that are already solved by RBMT such as ambiguity that includes syntactic variations, slang, irregular verbs, and others [28]. In addition, quality of the translation depends on the size of the corpus, small corpus usually results in poor translation. CBMT can be divided into two categories: statistical and example-based machine translation.

Statistical Machine Translation

Statistical machine translation (SMT) is introduced in 1949 by Warren Weaver and re-introduced by IBM in 1993. In the last two decades, SMT dominated

the field of machine translation research and market [18] [29]. SMT uses machine learning algorithms to compute the statistical model from the previously translated text (bilingual corpus) and use it for translation. It applies a learning algorithm to a parallel corpus to get the probability of the most likely translation of the input sentence [29]. SMT systems are categorized as word-based and phrase-based [21]. It can translate the words (word-based models) or phrases (phrase-based models) as atomic units. The main source of knowledge in SMT is a table with phrase/words translations with their probabilities.

The accuracy of SMT depends on the size of the bilingual corpus where an accurate translation is obtained from large corpus. However, content disambiguation is the main problem of SMT where this approach ignores the meaning of the word [20].

Example-Based Machine Translation

Example-based machine translation (EBMT) relies on the stored translations in its database to translate the new text. This class can be dated back to 80s [30]. It employs the principle of analogy and it is characterized by the use of bilingual corpus with bitexts of both languages as main knowledge base at run time [31]. EBMT uses already seen examples in the training data to translate new texts without using linguistic rules. It translates the input sentence by comparing it against the already translated sentences in the parallel corpus. If there is no match, EBMT splits the input sentence into smaller segments (e.g. clauses) and align each segment with its corresponding translation in the parallel corpus. The

translated segments are recombined to form the output translation.

The accuracy of the translation depends on the existence of the equivalent examples in the bilingual corpus. In addition, this approach consumes huge memory to store the training data at run time [32].

3.1.3 Hybrid-based Machine Translation

Hybrid-based machine translation (HBMT) is proposed to resolve the tradeoffs between RBMT and CBMT approaches. It is a combination of RBMT and CBMT approaches. It involves the hybridization of machine translation techniques such as using linguistics knowledge with SMT or using CBMT components with RBMT [33]. It has the same requirements as RBMT and CBMT.

HBMT is more efficient than RBMT and CBMT as it is based on rules and statistics [21]. Consequently, HBMT has the drawbacks of these approaches which make it difficult to maintain [20].

3.1.4 Neural machine translation

Neural machine translation (NMT) is a new machine translation technique that is originally developed using sequence-to-sequence models [34] [35]. NMT has been improved using attention-based variants [36] [37]. It is currently a widely-used technique for machine translation and other natural language processing tasks such as text summarization, dialogue, and parsing. Recently, NMT outperformed other machine translation techniques such as RBMT and SMT [38] [39] [36] [40]

[41].

However, NMT is data-hungry approach where effective results are obtained with high languages' resources such as English-French pair. However, it is less efficient with low-resources languages such as sign languages and Sindhi language [21].

3.1.5 Conclusions

The development of sign language machine translation systems followed the machine translation of spoken languages. The techniques used for spoken translation varies from rule-based to neural machine translation. HBMT and NMT showed high translation accuracies compared with other translation techniques. However, these techniques need enormous data which is unavailable with sign languages in particular ArSL.

The machine translation of ArSL falls far behind other sign languages. This is attributed to many challenges such as lack of parallel corpus and experts scarcity. This makes RBMT the appropriate approach for ArSL machine translation given that RBMT has good accuracy if the translation is limited to a particular domain [21].

CHAPTER 4

LITERATURE REVIEW

Recognizing and translating ArSL into meaningful Arabic is important for full integration of the deaf in the community. The framework consists of two parts recognition and translation as shown in Figure 4.1. The recognition part is responsible for recognizing the ArSL signs in video streams and convert them into Arabic text or speech. ArSL recognition systems preserve the structure of ArSL sentences which makes the output sentences has vague meaning. To address this issue, the machine translation part is needed to convert this output into meaningful Arabic sentence. Furthermore, the machine translation part is used to translate Arabic sentences into ArSL sentences.

Developing a full system for ArSL recognition and translation between Arabic and ArSL is one of the objectives of the KFUPM project funding this work. Sidig [11] is working on the recognition part and this thesis addressing the translation part.

In this chapter we first present a brief review of ArSL recognition systems.

Then we present a literature review and the state-of-the-art in the ArSL machine translation.

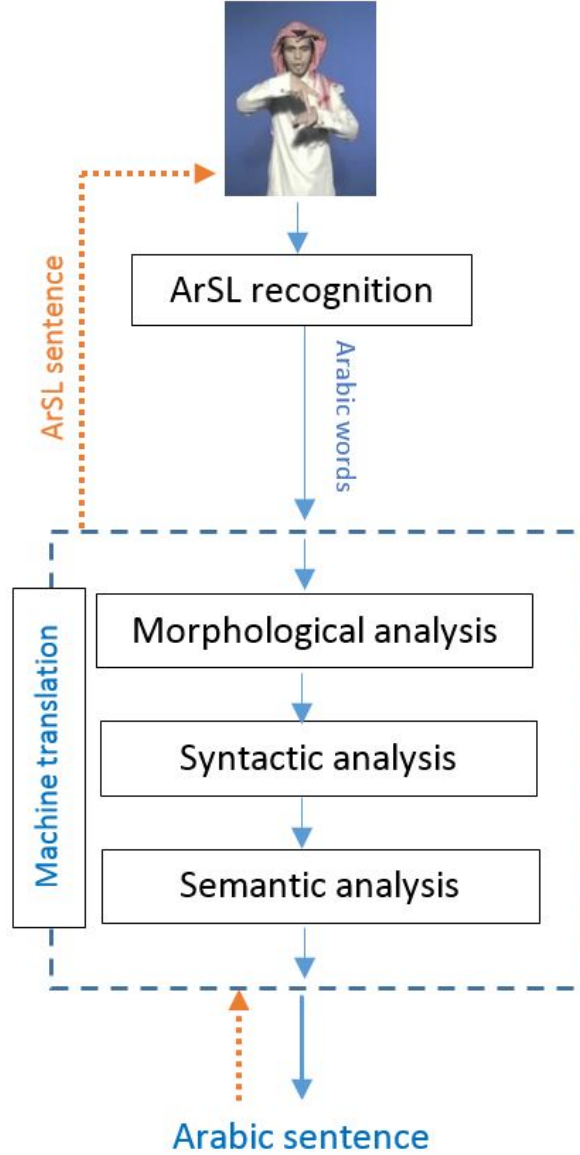


Figure 4.1: Framework of ArSL recognition and translation system.

4.1 ArSL recognition

ArSL recognition system identifies the equivalent Arabic words of acquired signs. The recognition process starts by preprocessing the acquired signs to make them convenient for features extraction. In the training stage, the extracted features are used in building the ArSL models that are used for classifying the new acquired signs into their equivalent Arabic words.

ArSL recognition systems consist of signs acquisition, features extraction, and classification. ArSL recognition starts by acquiring signs using signs acquisition techniques. There are two categories of signs' acquisition techniques: vision-based and sensor-based. Vision-based techniques depend mainly on single and multi-camera for signs capturing. Multi-camera helps in reducing some environmental constraints [42]. However, more computational load accompanies 3-D models that can be processed by the rapid advancement of processing units. Sensor-based techniques depend on wearing electronic sensor gloves by signer during signing (Figure 4.2). Several features are provided by the sensor gloves such as position, movement, orientation, rotation of the hand, and finger bending [43]. However, the requirement of wearing a cumbersome instrument by the signer is the drawback of this technique [44].

Several techniques have been proposed during the last decade for sign language recognition. These techniques can be categorized as sensor based [45, 46], vision based [47–54], phoneme based [55–60], and machine learning techniques [61–73].

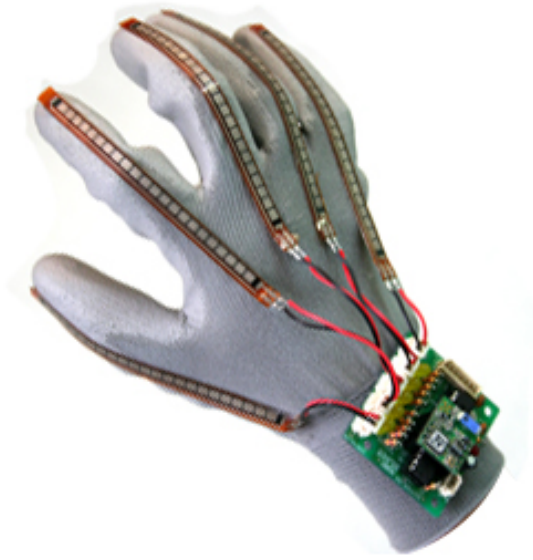


Figure 4.2: Hand glove sensors.

4.2 ArSL machine translation

Machine translation between Arabic and ArSL is a bidirectional problem. The first part is to translate ArSL sentences resulting from ArSL recognition systems into Arabic with correct structure and grammar. The second part is to translate Arabic sentences into ArSL.

4.2.1 ArSL to Arabic machine translation

All available ArSL recognition systems perform direct mapping between signs in ArSL sentence and their equivalent Arabic words. This preserves the structure and grammar of ArSL sentence and ignores the structure and grammar of the target language, Arabic. This type of translation results in Arabic sentences difficult to understand by an average Arabic speaker. In addition, using the resulting

sentence as an input for web search may not retrieve the required information by the deaf. In order to convert the generated sentences into correct Arabic sentences with correct structure and grammar we need a machine translation system to translate the sentence resulting from ArSL recognition system into Arabic. To our knowledge, no work covered this problem for ArSL. All the available ArSL recognition systems output the recognized sentences in their original structure and depend on the end-user to understand the meaning of the sentence.

4.2.2 Arabic to ArSL machine translation

Translation of Arabic into ArSL is important for communication between hearing people and deaf. Most of the hearing people depend on either experts or writing to interact with deaf. The first method is costly and unavailable most of the time. In addition, using writing for interaction with deaf is useless with illiterate deaf.

Translating Arabic, speech or text, into ArSL is needed to communicate with deaf and to translate messages, addresses, and educational materials into ArSL without involving expert translators. However, translating Arabic into ArSL faces some challenges such as lack of comprehensive corpus. In Addition, few linguistic studies cover ArSL grammar and structure [74].

ArSL machine translation is still in its infancy compared with other sign languages [75]. Several machine translation approaches have been proposed for other sign languages such as American sign language (ASL) [76], British sign language (BSL) [77], and Dutch sign language (DSL) [78]. These approaches vary mainly

on the used translation technique. Most of these approaches were rule-based. Direct translation is used by TESSA system [79] to translate the English text into its equivalent BSL signs. Transfer-based translation is used by most of the sign language translation systems such as ZARDOZ [80], ASL Workbench [81], ViSiCAST [82], Albuquerque Weather [83], South African sign language machine translation system [84], and Spanish sign language translation system [85]. TEAM system [76] used interlingua-based approach for translating English into ASL. Huenerfauth [86] proposed a system combining direct, transfer, and interlingual methodologies into one system to translate English into ASL. Other systems started using data-driven techniques for sign language translation such as statistical machine translation (SMT) [87] [88] and example-based machine translation (EBMT) [78]. However, the accuracy of these systems depends on the size of the parallel corpus which is usually limited for most sign languages.

A number of attempts has been made during the last decade to develop machine translation systems for translating Arabic text into ArSL. Almasoud [89] used translation rules to translate Arabic text into ArSL. The input text is morphologically analyzed and the ArSL rules are applied on each Arabic word to transform it into its equivalent sign. The domain ontology of each word is searched to get the words' sign code in SignWriting database which is used for retrieving the equivalent Sign Writing symbol. If the sign code of the word is not found, then the sign code of one of its synonyms is returned or the word is finger spelled. To evaluate the proposed system, an expert is consulted. The used corpus is limited

to only 54 instances so most of the words is expected to be finger spelled.

A corpus-based approach for translating Arabic text into ArSL using chunk-based EBMT is used by Almohimeed et al. [74]. To ensure only one output of the morphological analyzer, the input sentence is diacriticized using Google Tashkeel on the pre-processing step. The output of the morphological analyzer is matched against chunks in the chunk table. If the chunk is not found, a word to sign translation is performed using the sign dictionary. To evaluate the system, a corpus for instructional language with 203 signed sentences is used with an expert and Leave-one-Out (LOO) evaluation techniques. Using LOO evaluation technique, a 46.7% word error rate (WER) and 29.4% average position-independent WER are reported. EBMT depends on the examples quality and their similarity to the input text. In addition, Google Tashkeel project is not continued.

An algorithm to convert Arabic text sentences into ASL is presented in [90]. The algorithm starts by using morphological analyzer to find the root of verb words in the sentence and extracts other features depending on the morphological pattern. Then syntax analysis is performed to build the parse tree using dependence grammar concept. The nominal sentences are directly mapped into ASL while other sentences are converted into Time-Comment. Finally, a robot is developed to search for each word of the ASL tree in the ASL dictionary and performs it directly. If there is no word matching in the ASL dictionary, the robot performs full sign of the word using the word features extracted by morphological and syntax analyzers. Alfi et al. [91] proposed a translation system from Ara-

bic text into ArSL based on a knowledge base. A rule-based technique is used to convert the root of the sentence words, which are extracted by morphological analyzer, into its equivalent sign. Word synonym is used for words that do not have an equivalence in the ArSL dictionary. Otherwise, the word is finger spelled. The proposed system is evaluated by five experts using 101 sentences and 97.7% F-score is reported. This work covers only nominal sentences and ignores other sentence types.

Other researches targeted mobile applications [92–96]. These systems applied direct machine translation by translating each word in the input sentence into its corresponding sign in the sign dictionary or spelling it for missing equivalent sign. These systems wrongly assumed that the grammar of ArSL is similar to Arabic language [74]. In addition, the semantic of the input sentence is ignored in the translation process.

4.3 Conclusions

A comprehensive system for recognizing and translating ArSL into Arabic is needed to communicate with the deaf. In this chapter, we surveyed the techniques used for ArSL recognition and translation. Based on the conducted survey on machine translation of ArSL, we can conclude the following:-

- Limited datasets are used in the surveyed systems due to the lack of benchmark ArSL databases. In addition, these datasets are unavailable for other researchers.

- Some systems wrongly assumed that ArSL shares the grammar and structure with Arabic language.
- Most of the systems, especially the old ones, are evaluated by experts. This is may be attributed to the nature of the problem and to the lack of automated evaluation techniques for such systems.
- To our knowledge, no work covered the translation of the ArSL sentences resulting from ArSL recognition systems into Arabic.
- Semantic translation is essential for an accurate machine translation of Arabic into ArSL, however, most of the Arabic to ArSL translation systems perform direct translation and few works employed semantics in the translation.
- Due to the lack of benchmarking databases, the comparison between different techniques is not reported.

CHAPTER 5

GLOSS ANNOTATION SYSTEM

Sign language is a visual language that uses body language such as hand shape and facial expressions to convey meaning. Sign language is represented visually using video streams or sequences of images. However, describing sign language textually is needed in different disciplines such as deaf education and signs generation. We propose in this chapter a gloss annotation system to describe ArSL sign textually.

5.1 Symbolic notation systems

The transcription of sign language requires writing systems that can represent various parameters of the sign language, such as the signs, hand shapes, and facial expressions. There are several notation methods to represent the sign language, which can be categorized as symbolic or textural.

Symbolic notation systems, such as Stokoe [1] and HamNoSys [97], depend on

Table 5.1: Samples of Stokoe notations [1]

symbol	description
^	Upward movement
v	Downward movement
N	Up and down movement
>	Rightward movement
<	Leftward movement
Z	Side to side movement
T	Movement toward signer
⊥	Movement away from signer
I	Back and forth movement
a	Supinating rotation (twisting palm up)

symbols for sign representation. Stokoe notation was created by William Stokoe for ASL in 1960. Stokoe notation uses latin letters and numerals for shapes that have finger spellings, and iconic glyphs to transcribe the movement, position, and orientation of the hands [1]. Table 5.1 shows some of the symbols used in Stokoe notation system and Figure 5.1 shows the Stokoe notation for "SNAKE" sign.

HamNoSys is a phonetic transcription system developed in 1985 at the university of Hamburg, Germany. The HamNoSys notation consists of description of the



Figure 5.1: ASL "SNAKE" sign annotated using Stokoe system [3]

initial posture (shape, position, and orientation of the hands with non-manual features) with description of how the posture actions are performed sequentially [4]. Figure 5.2 shows some notations used for fingers spelling in HamNoSys system and Figure 5.3 shows an example of "HAMBURG" sign annotated using HamNoSys system.

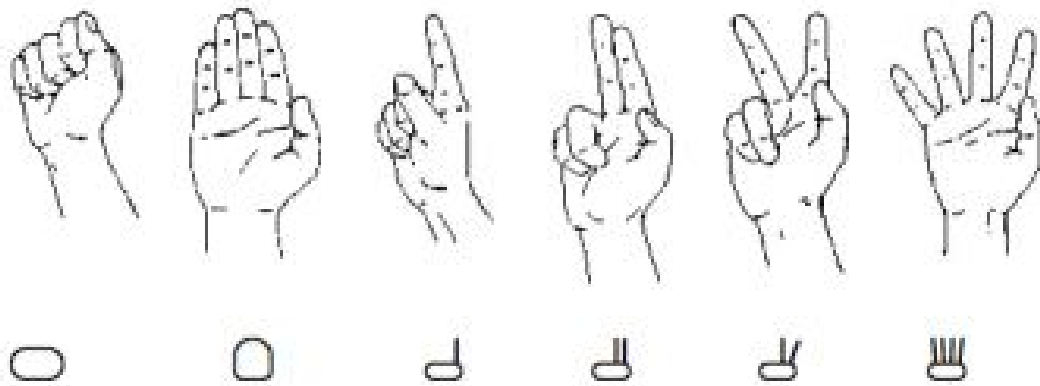


Figure 5.2: HamNoSys notations used for some of the fingers spelling [4]

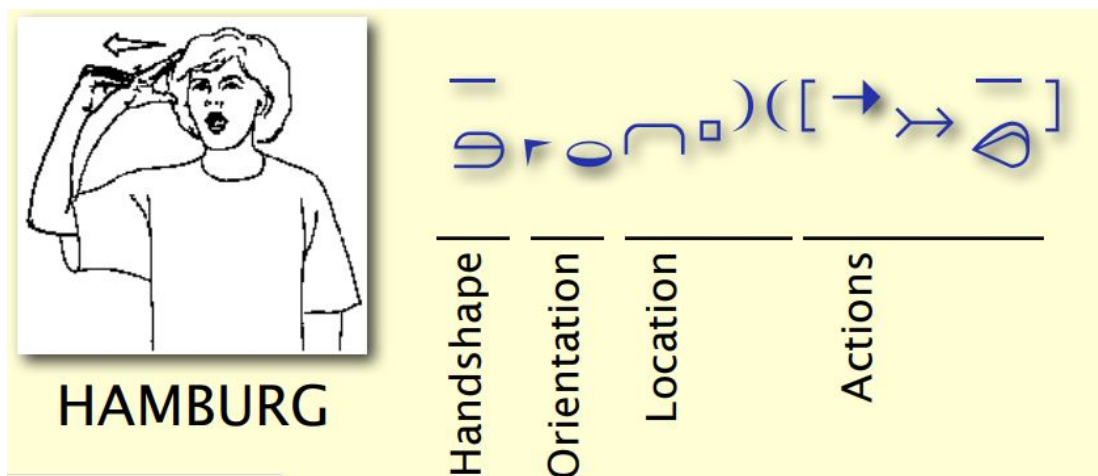


Figure 5.3: "HAMBURG" sign annotated using HamNoSys system [4]

5.2 Gloss annotation system

The symbolic annotation systems are textually complex and cannot easily represent the sign language parameters [98]. The gloss annotation is a textual representation of sign languages. Unlike other systems, the glossing annotation avoids the complexity of understanding other systems and does not require prior knowledge of the sign symbols.

ASL signs are represented in the glossing system by capitalized English words, e.g., CHEESE ("cheese") or MAN ("man"). If the sign consists of more than one word, a hyphen is used between them, e.g., DON'T-KNOW ("don't know"). Finger-spelled words are represented using fs- in front of the word, such as fs-JOHN ("John"). ASL compound signs are linked by "+," such as MOTHER+FATHER ("parent"), whereas "++" is used to indicate that the sign is repeated.

Non-manual signs, which simultaneously appear with the manual sign(s), are

represented in the ASL gloss by overlines, as shown in Figure 5.4. Figure 5.4 shows an information question marker (Wh), which indicates that the eyebrows should be squinted. The "q" marker is used to represent questions that are answered with a simple yes or no. This marker indicates that the eyebrows should be raised. ASL uses other markers to represent other non-manual signs, such as a negative statement "n," yes response "y," and rhetorical question "rq."

English : What is your name?
ASL gloss: Wh
NAME YOU

Figure 5.4: Representing *wh* questions by the ASL gloss

To our knowledge, ArSL does not have proper gloss notation. The ASL gloss annotation system cannot be used for ArSL because these languages use different scripts. In addition, we could not use it with the transliterated Arabic characters because the character case (uppercase or lowercase) has a meaning in Arabic transliteration systems [99]. To our knowledge, the only attempt to develop gloss notation for ArSL was by [98]. Aouiti et al. [98] translated the notations of the ASL glossing system to be used for ArSL. However, this anotation system does not consider the differences between ASL and ArSL. For example, Aouiti et al. [98] used the annotation 1-غ-ض *1-g-D* for هو *hw* "he" and هي *hy* "she" pronouns, whereas there are two different signs for these pronouns in ArSL. In addition, 1-غ-ملك *1-g-mlk* is used for absent pronouns, which are not used in ArSL.

Thus, we propose a new gloss annotation method for ArSL. The proposed

method follows the guidelines of [100] for ASL glossing with several changes to suite ArSL. The sign of ArSL is represented in our proposed glossing system between two brackets as shown in Table 5.2. This method removes the need for using a hyphen (as in the ASL glossing system) to represent the sign that consists of more than one word. Finger spelling is represented in this glossing system by # before and after the sign to be finger-spelled, as shown in Table 5.2. Repetition is represented by "+" after the sign, and the number of "plus" symbols reflects the number of repetitions. Sign emphasis is represented in our proposed glossing method using the 'ت-' *-t* symbol after the sign.

Markers (to represent non-manual expressions) are represented in our glossing notation using hyphen ("-") followed by the marker letter attached to the end of the sign(s). Table 5.2 shows the question markers س- *-s* and ست- *-st* attached to the ArSL question sentences. Other ASL gloss markers can be used in our glossing system by attaching to the end of the sign(s) gloss. For signs that involve articulation in a locus position, the location, object, or person is indicated with an index following the gloss. The indexed person, location, or object can be referred using the [أشارة *A\$Arp* "SIGN"]- sign followed by the index of the person, location, or object. Table 5.2 summarizes the gloss notation in our proposed glossing system.

Table 5.2: Notations of the proposed gloss system for ArSL

Gloss	Description	Arabic example	ArSL equivalent
[sign]	Sign exists in ArSL dictionary	بيت 'home' <i>byt</i> وزارة الصحة <i>wzArp AISHp</i> 'Ministry of Health'	'[HOME]' <i>[byt]</i> [وزارة الصحة] <i>[wzArp AISHp]</i>
#NAME#	Finger spelling of signs not in dictionary like names	'Sami' <i>sAmy</i>	'[MINISTRY OF HEALTH]', #SAMI# #sAmy#
[[[sign]s]-ست- <i>st</i>	Yes/No question that indicates that your eyebrows should be raised	انت حزين? <i>Hzyn Ant</i> 'Are you sad?'	[[حزين]]انت-ست <i>[[Hzyn] [Ant]]-st</i> '[[[SAD] [YOU]]]-st'
[[[sign]s]-س- <i>s</i>	Wh questions indicates that your eyebrows should be squinted	اسمك? <i>Asmk?</i> Your name?	اسم-س <i>[Asm]-s</i> '[NAME]-s'
[sign]+	Repetition. Each '+' corresponds to one repetition	اعدة <i>AEmdp</i> 'Poles'	اعود++ <i>[Emwd]++</i> '[POLE]++'
[sign]-ت- <i>t</i>	Emphasize the sign	شدت الالم <i>Sdyd Al>lm</i> 'very pain'	ال-ت <i>[Alm]-t</i> '[PAIN]-t'
[sign]:INDEX	Indexing: Pointing toward a certain location, object, or person and use it for future referencing. We can later use it with a sign by using the followed by INDEX	محمد يساعد اخوة ولكن اخوة غير سعيد <i>mHmd ysAEEd Axwp wlkN Axwp</i> <i>gyr sEyd</i> 'Mohammed helps his brother but his brother is unhappy'	#محمد# 1: [مساعدة] 2: [أخ] 2: [أشقاء]-1 [أخ] 2: [أشقاء]-2 <i>#mHmd#:1 [msAEEd] [Ax]:2</i> <i>[ASArp]-1 [lkn] [ASArp]-2 [sEyd]</i> <i>[lA]</i> #MOHAMMED#:1 [HELP] [BROTHER]:2 [SIGN]-1 [BUT] [SIGN]-2 [HAPPY] [NO]'
[sign]:ASArp 'SIGN']-Index	Referring to a person, location, or object already indexed by INDEX		

5.3 Conclusions

ArSL is a visual language that uses body language to convey meaning. Sign language can be represented visually and textually. The available way to represent ArSL is visually using video streams or images. We proposed in this chapter a textual gloss annotation system to represent ArSL. The proposed gloss annotation system follows the guidelines of [100] for ASL glossing with several changes to suite ArSL. The proposed gloss system can be used to represent the manual and non-manual features of ArSL textually.

CHAPTER 6

ARSL DATABASES

The availability of a comprehensive benchmarking database for ArSL is one of the challenges of the automatic recognition and translation between Arabic and ArSL. This chapter introduces a database for ArSL recognition and translation. The database can be used for ArSL recognition and it consists of 502 signs performed by four signers and recorded using Microsoft Kinect V2. We shared the development of this database with Sidig [11] under the support of KFUPM through project number INF10058. The database consists also of bilingual corpus consisting of 600 Arabic sentences translated into ArSL by two ArSL experts. This corpus can be used for machine translation between Arabic and ArSL. This database will be freely available for researchers.

6.1 Introduction

Sign language corpora are scarce [101]. Even if there is enough video data available online, this data is not annotated and the signs are not segmented which makes it

unsuitable for sign language recognition and translation systems. For ArSL, the availability of a comprehensive benchmarking database is one of the challenges of ArSL recognition and translation systems [74]. This is partially a result of the difficulties associated with sign language data collection such as time and cost in addition to the limited number of ArSL experts [17]. As a result, some researchers developed their own data that is usually limited or unavailable for other researchers and consequently the obtained results of the different techniques may not be comparable.

Most researchers in the literature used datasets with low number of signs [102] [49] [103] [104] [105]. Aujeszky and Eid [53] used skeleton joint point data provided by Kinect to recognize 18 signs. Ahmed and Aly in [106] used a dataset of 23 signs to evaluate their proposed technique. Mohandes et al. [47] used a dataset of 300 signs to evaluate their technique which is based on skin-color thresholding technique. However, these databases are not available for researchers or discarded. Shanableh et al. in [48] built a database of 23 signs, each sign was repeated 50 times by three signers. They reported that their setup doesn't restrict the background or the signer clothes. This database is extended by Sidig et al. [107] by adding one more signer. Alfonse et al. [108] presented a database consisting of 1216 signs. The signs are captured using ordinary HD camera, Microsoft Kinect V2, and LMC sensors. The database is performed by four signers in an unrestricted environment. However, this database can not be used for recognition systems using machine learning techniques as each sign is repeated only three times by two

signers. In addition, this database is not available.

SignsWorld Atlas is another database for ArSL presented by Shohieb et al. [109]. The database is captured using regular video camera. A total of 500 manual and non-manual sign elements were performed by different number of signers that ranges from two (for hand shapes in isolation and in single signs) to ten signers (for digits). Absence of signs repetition and unavailability of this database are limitations.

In contrast to ArSL, various databases are available for other sign languages. RWTH-BOSTON-50, RWTH-BOSTON-104, and RWTH-BOSTON-400 are ASL video-based databases created by Boston University [110–112]. RWTH-BOSTON-400 is the largest and it consists of 843 sentences performed by five signers. SIGNUM is a German sign Language database that is not freely available [113]. It consists of 780 sentences (450 signs) performed by 25 signers. ECHO is a sign language database available in three sign languages: Swedish, Dutch, and British [114]. It consists of five stories and some interviews with signers.

Based on the conducted survey on the available ArSL databases we can conclude that most of ArSL databases are generated by researchers and they are not available for other researchers. In addition, the available ArSL databases either are limited in size or do not contain much repetition hence unsuitable for techniques that need large size of data such as machine learning techniques. To address these issues, we developed two databases for ArSL recognition and translation. This first database, KArSL database, consists of 502 signs performed by

four professional signers and each sign is repeated fifty times by each signer. The database is recorded using state-of-art multi-modal Microsoft Kinect V2. The second database is a bilingual corpus consisting of 600 Arabic sentences translated into ArSL by two ArSL experts. These databases will be made freely available for interested researchers. More details about the two databases are in the following sections.

6.2 KArSL database

KArSL (**K**FUPM **A**rabic **S**ign **L**anguage) database is a part of a project for Arabic sign language recognition and translation using Microsoft Kinect V2. The collected database consists of eleven chapters of ArSL dictionary (Table 6.1). Each sign of the database is performed by four professional signers which is repeated fifty times by each signer. This resulted in a total of 100,400 samples of the whole database (200 samples/sign). Table 6.1 shows statistics of the collected signs. For more information about this database we refer to Sidig [11]

6.3 KArSL corpus

It merits specifying that there is no bilingual corpus for ArSL machine translation that is freely available for researchers. Thus, different researchers use different data sets, and consequently the accuracies of the different strategies may not be comparable.

Table 6.1: Statistics of KArSL database

SN	Category	Number of signs
1	Alphabets	39
2	Numbers	30
3	Health	89
4	Common verbs	32
5	Family	32
6	Characteristics	49
7	Directions and places	16
8	Social relationships	10
9	In house	57
10	Religion	103
11	Jobs and professions	44
Total		502

Almohimeed et al. [115] developed a corpus of instructional language, which is used in schools for deaf students. Three native ArSL signers and one expert interpreter are involved in building the corpus. The corpus consists of 710 signs to form 203 sentences. Assaleh et al. [116] collected 40 sentences from one deaf person with 19 repetitions of each sentence. Elhadj et al. [117] developed a corpus of Saudi sign language that consists of 4,500 signs in the Islamic domain. These databases are not available for researchers.

In contrast, several non-ArSL corpora have been developed in the last decade. RWTH-BOSTON-50 [111] is an ASL database that consists of 50 sentences signed by two deaf people. RWTH-BOSTON-104 [118] and RWTH-BOSTON-400 [119] are extensions of this database and include 201 and 454 sentences, respectively. These databases can be used for continuous sign language recognition and translation. The National Center for Sign Language and Gesture Resources (NCSLGR) developed a database of more than 1,000 sentences, 15 short stories, and 50-

minute-long dialogues [120]. This database is only available on CDs. The ASL Lexicon Video Dataset (ASLLVD) is another database that consists of 15 short narratives and hundreds of sentences [121]. The ATIS corpus is available for English, South African, German, and Irish sign languages [122]. It is based on the domain of air travel information and it consists of 680 sentences. In addition to ASL, many corpora have been developed for other sign languages, such as Dutch [123], Irish [124], Chinese [125], and German [126].

This work had no established base of word lists or corpus; hence, we began our own data collection. We targeted the health domain in building our corpus. We prepared a bilingual parallel corpus of 600 sentences. The corpus is annotated using our proposed glossing system discussed in chapter 5. The sentences of the database are real-life sentences that are used in medical centers. These sentences cover nearly all Arabic sentence types (e.g., verbal, nominal, questions). There are 3,294 words in our corpus (1,172 unique words), and the average sentence length is 5.5 words. Figure 6.1 shows the frequency of words appearing in the corpus. As shown in the figure, the corpus has a large number of unique words as more than 85% of the words in the corpus appeared less than 5 times. The large number of unique words makes the corpus appropriate for evaluating real world ArSL translation systems. The sign language portion of the corpus consists of two translations of each sentence translated by one deaf person and one expert bilingual translator (Appendix A). The two translations have lexical or structural differences, but both preserve the meaning of Arabic sentences. This variation may

be attributed to how the translator conveys the meaning of the Arabic sentence to the deaf. Figure 6.2 shows an example of two translations of an Arabic sentence. As shown in Figure 6.2, both translations have the same meaning but differ in structure and the use of additional words to clarify the meaning to the deaf. We divided the corpus into training (70%), development (15%), and testing (15%) sets as shown in Appendix A.

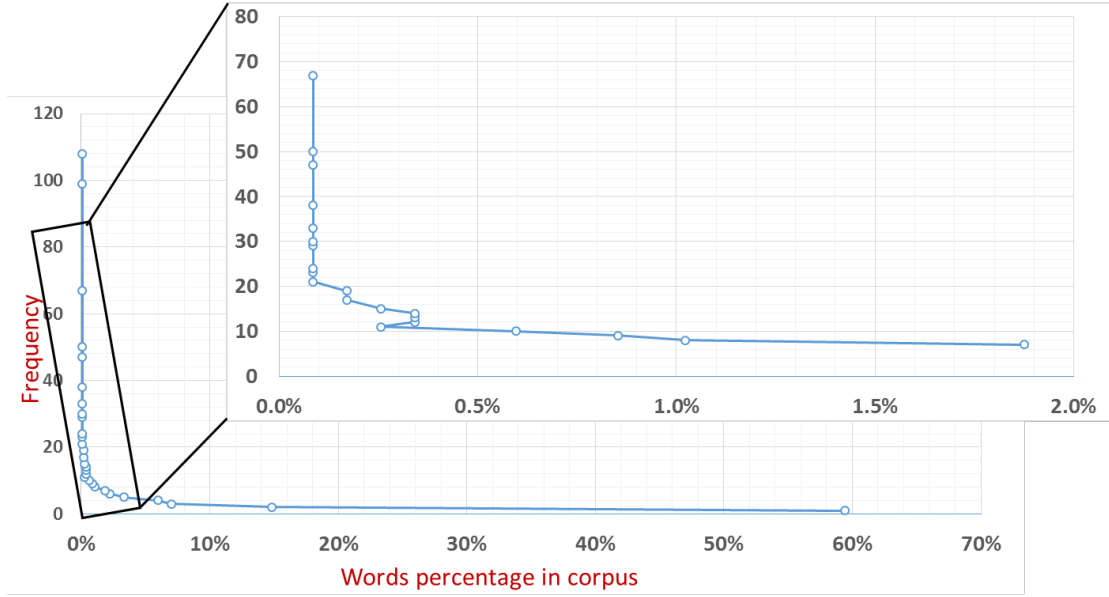


Figure 6.1: Words frequency in the corpus

In addition, the ArSL dictionary is available as images with an Arabic annotation for each sign. This annotation does not follow a consistent rule for annotation, as shown in Figure 6.3, where some signs are annotated using the noun form (Figure 6.3 (a)), whereas others with the verb form (Figure 6.3 (b)). To handle this issue and make the dictionary usable for natural language processing (NLP) tasks, we re-annotated each sign in the ArSL dictionary using the following information: *SID*, *Word*, *Lemma*, and *Translation*. *SID* is a unique number for each sign in

Arabic	<p>تجنب الاغذية المسببة للإسهال</p> <p><i>tjnb AlAg*yp Almsbbp ll<shAl</i></p> <p>Avoid foods that cause diarrhea</p>
ArSL	<p>[ممنوع] [أكل] [سبب] [إسهال]</p> <p><i>[mmmwE] [Akl] [sbb] [AshAl]</i></p> <p>[FORBIDDEN] [FOOD] [CAUSE] [DIARRHEA]</p>
	<p>[في] [أكل] [سبب] [إسهال] [أفضل] [وقف]</p> <p><i>[fy] [Akl] [sbb] [AshAl] [>fDl] [wqf]</i></p> <p>[IF] [FOOD] [CAUSE] [DIARRHEA] [BETTER] [STOP]</p>

Figure 6.2: Different manual translations of an Arabic sentence

the dictionary, *Word* is the Arabic annotation of the sign used by the ArSL dictionary authors, *lemma* is the lemma of the sign word, and *Translation* is the English translation of the sign.

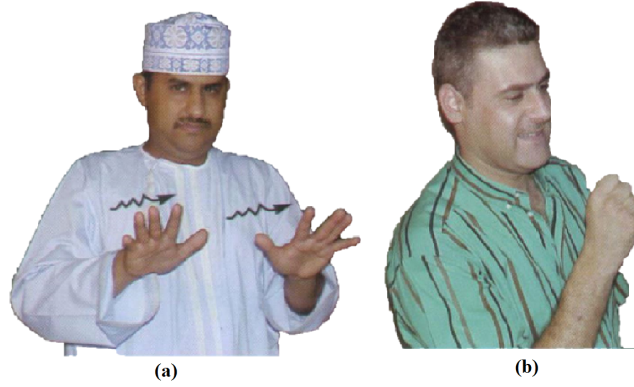


Figure 6.3: Use of different part-of-speech (POS) tags for signs in ArSL dictionary. (a) انتشار *Ant\$Ar* "SPREAD" (b) يغني *ygnny* "HE IS SINGING"

6.4 Conclusions

One of the challenges of ArSL recognition and translation systems is the lack of database. We handled this issue by introducing KArSL database that can be used by researchers for ArSL recognition and translation. The database consists of annotated video signs and bilingual parallel corpus. The annotated video signs can be used for ArSL recognition and it is recorded using the state-of-art multi-modal Microsoft Kinect V2. The annotated video signs consists of 502 signs performed by four signers. Each sign is repeated 50 times by each signer which makes it suitable for techniques that requires large number of samples such as machine learning techniques. The bilingual parallel corpus consists of 600 Arabic sentences and each sentence is translated into ArSL by two ArSL experts. Both databases will be freely available for researchers.

CHAPTER 7

MACHINE TRANSLATION OF ARABIC SIGN LANGUAGE INTO ARABIC

ArSL recognition systems output sequence of Arabic words resulting from recognizing signs in the ArSL sentence. These systems perform direct translation between the recognized sign in the ArSL sentence and its corresponding Arabic in the ArSL dictionary. This results in persevering the structure and grammar of the ArSL sentence which makes the resulting sentence not fully understandable by an average Arabic speaker. We develop in this chapter a machine translation system to convert the recognized ArSL sentence into Arabic sentences that meet the structure and grammar of Arabic.

7.1 Introduction

ArSL recognition systems recognize continuous ArSL sentences and represent the output verbally or textually as a set of Arabic words. To our knowledge, all the available ArSL recognition systems perform direct mapping between the recognized signs in ArSL sentence and their equivalent Arabic words. This preserves the structure and grammar of ArSL sentence and ignores the structure and grammar of the target language, Arabic, which results in Arabic sentences with vague meaning. In order to convert these sentences into Arabic sentences with correct structure and grammar, we need to add a layer between the ArSL recognition system and the end-user. This layer is responsible for translating the sentence resulting from ArSL recognition system into Arabic as shown in Figure 7.1. As shown in the figure, the output of ArSL recognition system is a set of isolated Arabic words representing the signs in ArSL sentence. ArSL to Arabic machine translation system translates these words into meaningful Arabic sentence.

In this chapter, we develop this machine translation system that work at the word, phrase, and sentence levels. The input to the translation system is a set of Arabic words resulting from the ArSL recognition system. These words represent the ArSL sentence which is annotated using the gloss annotation system discussed in chapter 5. Translating this sentence into Arabic starts by pre-processing the input ArSL sentence and then translating it into Arabic at the word, phrase, and sentence levels. Finally, post-processing is performed to the output to enhance the translation. Figure 7.2 shows the framework of the proposed system.

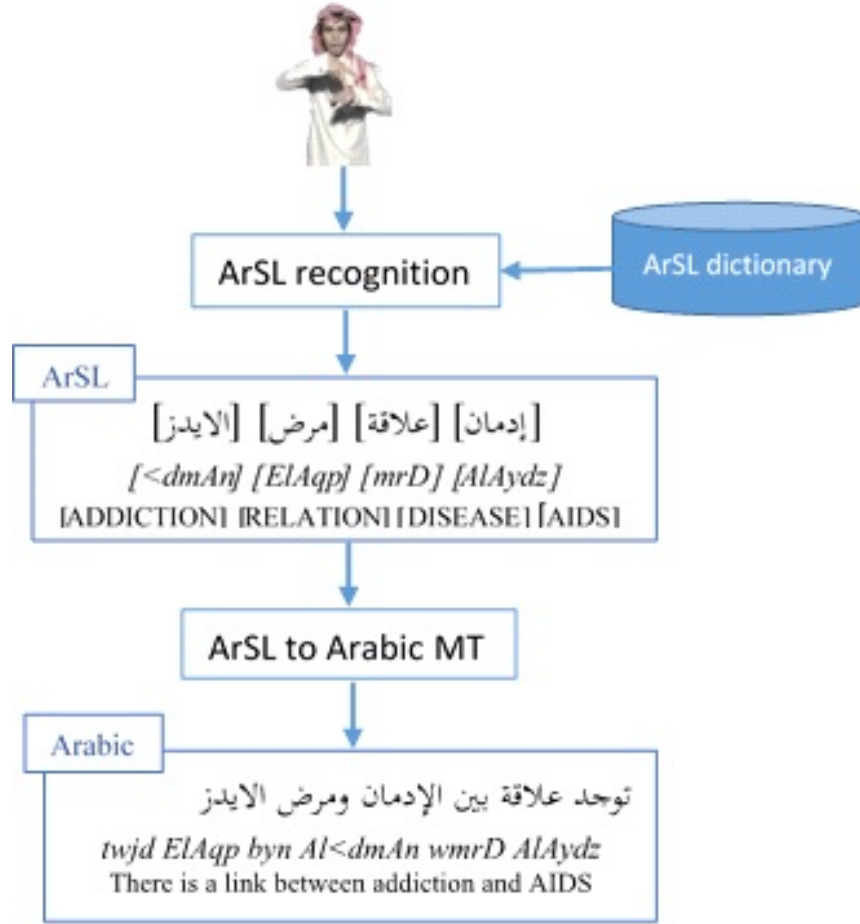


Figure 7.1: ArSL recognition and translation framework.

7.2 Pre-processing

The output of the ArSL recognition system is an ArSL sentence represented as a sequence of Arabic words. These words are encoded in UTF-8 and are the input to our machine translation system. The first step in the pre-processing stage is transliterating the input text using Habash-Soudi-Buckwalter (HSB) transliteration system [127]. This transliteration helps in using the NLP tools that do not support UTF-8 encoding. To remove the variations between the words with the same meaning, we normalize the input sentence as follows:-

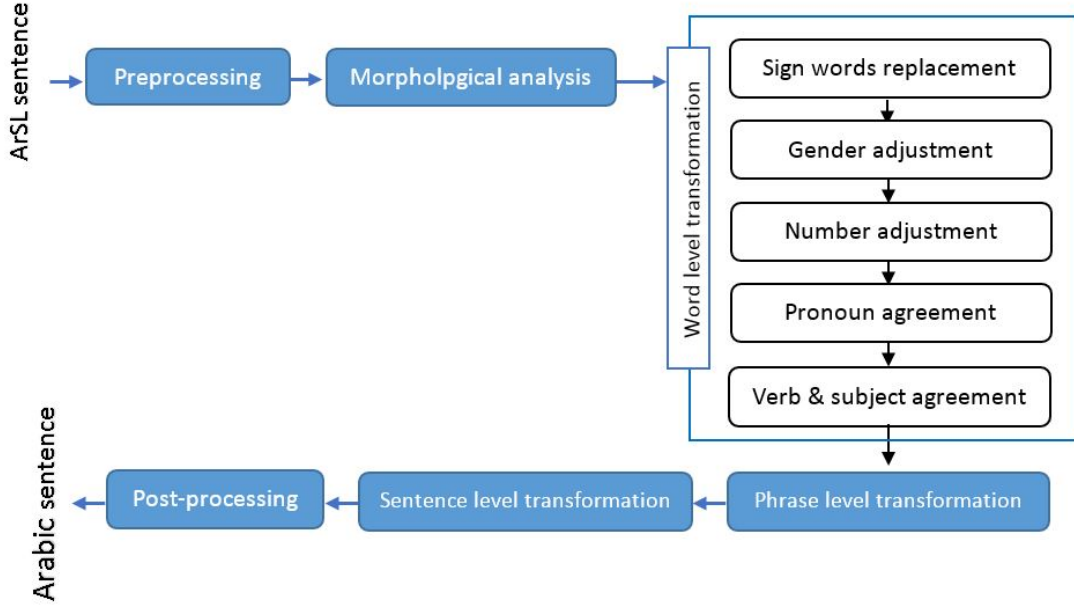


Figure 7.2: ArSL to Arabic machine translation system framework.

- All Alif variations (viz. أ "Alif with Hamza over", إ "Alif with Hamza under", آ "Alif with maddah", and آ "Alif with wasla") are normalized into ا "Alif without Hamza."
- ة "Taa marbutah" is normalized into ه "Haa."

Then we interpret the gloss notations and convert them into their equivalent words. The facial expressions that are expressed using characters attached to the sign(s) are converted to words representing the facial expression and are inserted in their appropriate positions preserving the structure of the ArSL sentence. For example, the facial expression ست *st* that represents interrogation is shown in Figure 7.3 attached to the signs. We convert this facial expression into question mark and هل *hl* "ARE" and inserted these new words, according to the structure of ArSL sentence, at the beginning and end of the sentence, respectively.

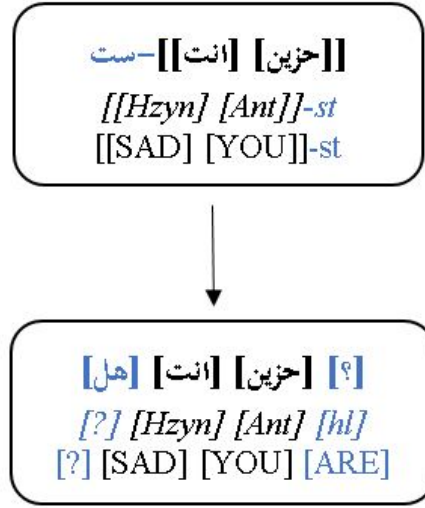


Figure 7.3: Converting facial expressions into words.

7.3 Morphological analysis

Translating an ArSL sentence into Arabic requires some information about each sign word in the ArSL sentence. The required information can be extracted by performing morphological analysis on the ArSL sentences' sign words. However, the available morphological analyzers are trained on languages other than ArSL that make them unable to analyze the ArSL sentences. In addition, training morphological analyzers on ArSL requires large annotated ArSL corpus for this purpose which is unavailable. To address this challenge, we extract gender, number, POS, and English translation from the input sentence as following:

- Feminine noun in ArSL is expressed by performing [بنت] *[bnt]* "[GIRL]" sign before the noun. We use this sign to set the *gender* feature of the following noun sign to feminine and then we remove [بنت] *[bnt]* "[GIRL]" sign from the sentence. We used also MADAMIRA toolkit [128] to obtain the gender of other sign words.

- Plurality in ArSL is expressed by repeating the sign or using dedicated signs such as [ثلاثة] [*vlAvh*] "[THREE]" or [كثير] [*Kvyr*] "[MUCH]." We use these signs and signs repetition to set the *number* feature of the sign word to single, dual, or plural.
- Proper nouns are finger spelled in ArSL and expressed in ArSL gloss annotation system between hashes (#). This helps in identifying proper nouns and setting their *POS* feature to proper noun. Some verbs and nouns share the same sign in ArSL. However, the way of signing the verb can be distinguished by the ArSL recognition systems. This information is encoded in the ArSL gloss notation system and therefore we use it to set the POS tag of that signs to verb.
- *English translation* of each sign is obtained using MADAMIRA toolkit [128].

7.4 Translation system

ArSL differs from Arabic at the structure and grammar of word, phrase, and sentence. Translating ArSL sentence into Arabic passes through three translation levels: word, phrase, and sentence (Figure 7.4). The translation system starts by translating ArSL sign words into their corresponding Arabic words. Then these words are formed into phrases which are combined to form Arabic sentences according to the structure and grammar of Arabic. Each translation level involves sub-stages that will be discussed in the following sections.

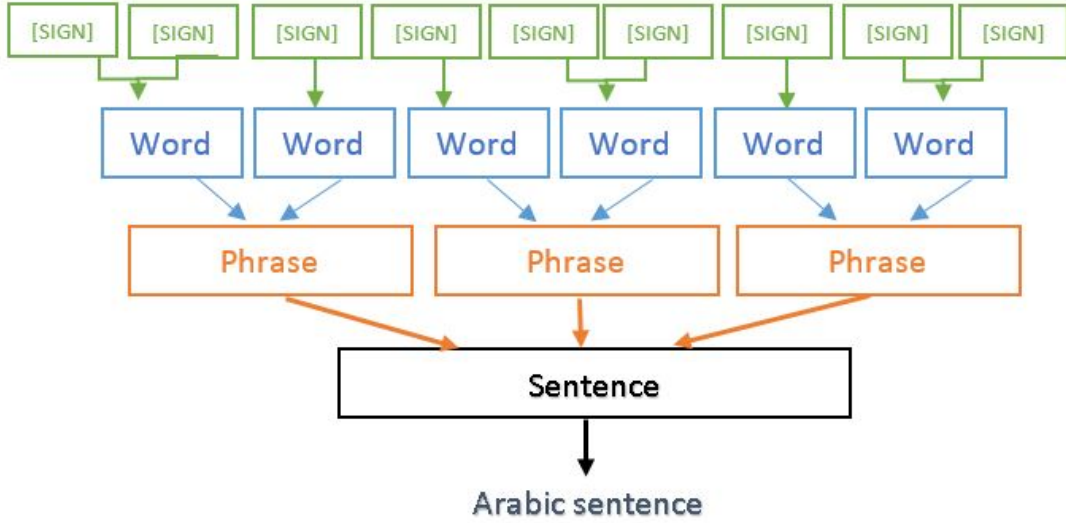


Figure 7.4: Translating ArSL sign words (top) into words, phrases, and Arabic sentence (bottom).

7.4.1 Word level translation

ArSL recognition systems replace each sign with its equivalent Arabic word in the ArSL dictionary. ArSL uses dedicated signs to show the gender, number, and tense of the word in contrast to Arabic which inflects the word to show the gender, number, and tense. For example, the Arabic word *مدرسات* *mdrsAt* "feminine teachers" are expressed in ArSL as [ثلاثة] [مدرس] [بنت] *[bnt] [mdrs] [vlAvp]* "[GIRL] [TEACHER] [THREE]". The first sign [بنت] *[bnt]* "[GIRL]" is used to show the gender of the next sign, [مدرس] *[mdrs]* "[TEACHER]", while the last sign, [ثلاثة] *[vlAvh]* "[THREE]", is used to show the number which is more than two in this example. Word level translation involves a set of sub-stages to convert these signs into Arabic words and make the resulting words agree with the subject and verb of the sentence in gender and number. These sub-stages involves sign replacement, gender agreement, number agreement, pronoun agreement, and

verb and subject agreement.

Sign words replacement

ArSL has a limited vocabulary size (approximately 3,200 signs) that makes deaf people depend mainly on using word synonyms or describing the OOV words using other words. For example, some deaf uses [السبب] *[Alsbb]* "REASON" sign instead of لماذا *lmA *A* "why" word in question sentence. We replace such words with their equivalent Arabic words. Table 7.1 shows the signs replaced by their equivalent Arabic words.

Table 7.1: ArSL signs replaced with their equivalent Arabic words

Sign	Arabic equivalent
هنا ام هنا <i>hnA Am hnA</i> "HERE OR HERE"	اين Ayn "where"
السبب <i>Alsbb</i> "REASON"	لماذا <i>lmA *A</i> "why"
لا <i>lA</i> "NO"	غير، لا، لم، لن، ليس، ليست <i>gyr, lA, lm, ln, lys, lyst</i> "No"
لازم <i>lAzm</i> "MUST"	يجب <i>yjb</i> "MUST"

Gender adjustment

ArSL uses the same sign for masculine and feminine. It uses [بنت] *[bnt]* "GIRL" sign before the noun for feminine nouns whereas Arabic inflects nouns to show the gender. For example, [جندي] *[bnt] [jndy]* "GIRL [SOLDIER]" correspond

to the Arabic word جندية *jndyp* "feminine soldier."

In this stage, we convert the ArSL feminine nouns into their corresponding Arabic by adding ه *h* "Haa", اء *A'* "Alif with hamza", and ى *Y* "Taa maqsurah" to the masculine form of the noun and remove the [بنت] *[bnt]* "[GIRL]" sign from the ArSL sentence. This result in three candidate feminine nouns of each ArSL feminine noun as shown in Figure 7.5. To select among the candidate feminine nouns we applied statistical language model using the KenLM toolkit [129].

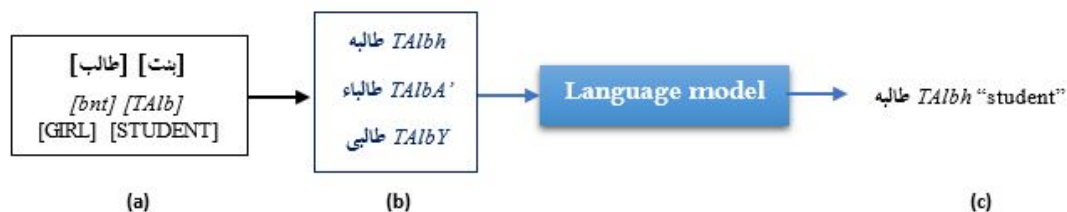


Figure 7.5: Converting ArSL feminine noun into Arabic. (a) ArSL sign words (b) candidate Arabic feminine nouns (c) resulting Arabic feminine noun

Number adjustment

Plurality is expressed in ArSL by repeating the sign or using other signs such as [ثلاثة] *[vIAvp]* "[THREE]" or [كثير] *[kvyr]* "[MUCH]" with the singular form of the sign. In contrast, Arabic inflects the noun to show the number. For example, the Arabic plural noun رجال *rzAl* "men" is expressed in ArSL as [ثلاثة] *[vIAvp]* [رجل] *[rjl]* "[THREE] [MAN]". To convert the ArSL plural signs into Arabic, we need to consider the following:

- Target plural type: There are different types of plural in Arabic (dual, masculine plural sound, feminine plural sound, and broken plural). We

select the target plural that we will convert the ArSL sign into based on the following rules:-

- Convert the sign into Arabic dual plural if the ArSL sign is repeated or preceded/followed by [اثنان] *[AvnAn]* ”[TWO]” sign.
- Convert the sign into Arabic plural (sound or broken) if the ArSL sign is repeated more than once or followed by [ثلاثة] *[vlAvp]* ”[THREE]” or [كثير] *[kvyr]* ”[MUCH]” signs.
- Arabic nouns and adjectives can have more than one plural based on its position in the sentence.

To our knowledge, none of Arabic NLP tools can find the plural form of the singular Arabic word. So, we developed a rule-based technique to get the plural forms of the Arabic singular word. In addition, we collected a corpus for ArSL broken plurals consisting of 30,296 singular words with their plurals.

a. *Dual plural conversion*

Dual plural is used to refer to two people or two things. ArSL repeats sign or uses [اثنان] *[AvnAn]* ”[TWO]” sign word to express the dual plural. ArSL recognition systems output the dual sign words in the same form that are expressed in ArSL (repeating singular word or using [اثنان] *[AvnAn]* ”[TWO]” word before or after the singular word). In contrast, Arabic inflects the singular to show the dual plural. Arabic dual plural has two main forms in Arabic: Word+ان *An* and Word+ين *yn*. The first form is used

with nominative nouns and adjectives while the second form is used with genitive and accusative nouns and adjectives.

To our knowledge, there is no available tool to convert Arabic singular word into dual. Thus, we developed Algorithm 1 to convert the singular Arabic word into dual.

As shown in the algorithm, we get the dual of the input word by applying the following rules:-

- If the singular word ends with $ى$ Y "Alif maqsurah" and
 - If the word consists of three characters and $ى$ Y "Alif maqsurah" was originally $و$ w "Waw", then replace $ى$ Y "Alif maqsurah" by $و$ w "Waw" and append $ين$ yn to the word. Otherwise, replace $ى$ Y "Alif maqsurah" by $ي$ y and append $ان$ An to the word. For example,

$$[فتى] + [ftY] + "[BOY] + " \xrightarrow{\text{dual plural}} \text{فتيان } ftyAn \text{ "two boys"}$$

- If the singular word ends with $ة$ p "Taa marbutah" or $هـ$ h "Haa", then replace them by $ت$ t "Taa" and add $ان$ An to the word. For example,

$$[خيمة] + [xym p] + "[TENT] + " \xrightarrow{\text{dual plural}} \text{خيמתان } xymtAn \text{ "two tents"}$$

- If the singular word ends with $و$ w "Waw", then add $ين$ yn to the word. For example,

$$[دلو] + [dlw] + "[PAIL] + " \xrightarrow{\text{dual plural}} \text{دلوين } dlwyn \text{ "two pails"}$$

Algorithm 1 Singular to dual plural converter algorithm

Require: w : Arabic singular word to be converted into dual plural

Ensure: $dualPlurals$: dual plural(s) of the input word w

```
1:  $LastChars = w.getLastCharacters()$ 
2: switch  $LastChars$  do
3:   case  $ي$   $Y$  "Alif maqsurah"
4:     if  $w.getLength() == 3$  then
5:       if  $LastChars$  was originally  $و$   $w$  "Waw" then
6:          $w = w.replaceCharacter(lastChars, و$   $w$  "Waw")
7:          $dual = w + ين$   $Yn$ 
8:       else
9:          $w = w.replaceCharacter(lastChars, ي$   $Y$  "Yaa")
10:         $dual = w + ان$   $An$ 
11:      end if
12:    else
13:       $w = w.replaceCharacter(lastChars, ي$   $Y$  "Yaa")
14:       $dual = w + ان$   $An$ 
15:    end if
16:     $dualPlurals.add(dual)$ 
17:  case  $ة$   $p$  "Taa marbutahh" or  $ه$   $h$  "Haa"
18:     $w = w.replaceCharacter(lastChars, ت$   $t$  "Taa")
19:     $dualPlurals.add(w + ان$   $An$ )
20:  case  $و$   $w$  "Waw"
21:     $dualPlurals.add(w + ين$   $Yn$ )
22:  case  $ا$   $A$  "Alif with Hamza"
23:    if  $ا$  "Hamza" is not original then
24:       $w = w.replaceCharacter(ا$  "Hamza",  $و$   $w$  "Waw")
25:    end if
26:     $dualPlurals.add(w + ان$   $An$ )
27:  other
28:     $dualPlurals.add(w + ان$   $An$ )
29:     $dualPlurals.add(w + ين$   $Yn$ )
```

- If the word ends with ء A ' "Alif with Hamza", then if ء ' "Hamza" is original, add ان An otherwise replace ء ' "Hamza" by و w "Waw" and add ان An to the word. For example,

[صحراء]+ [SHrA']+"[DESERT]"+ $\xrightarrow{\text{dual plural}}$ صحراوان SHrAwAn
 "two deserts"

- If none of the above rules is satisfied, then return two dual plurals for the word by attaching ان An and ين yn to the word and select between them later using the language model.

b. *Plurals conversion*

ArSL repeats the sign two times or uses dedicated signs such as [ثلاثة] [vLAvp] "[THREE]" and [كثير] [kvyr] "[MUCH]" to show the plurality of the sign. The equivalent of this plural in Arabic is either broken plural or sound plural.

Broken plural conversion: Arabic broken plural differ from other plurals in that it depends on the word pattern and follows different rules in forming plurals. It changes the form of singular word to another form. For example, the broken plural of the singular noun دواء dwA ' "medicine" is ادوية Adwyp "medicines" where new letters are added (ة، ي، p) and others are removed (ء '). Broken plural uses the pattern of the singular to convert it into one or more of its twenty-one patterns according to the availability of diacritics on the singular pattern. The twenty-one patterns of broken plural are فعل fEl, فعلاء fElA', فعالان fElAn, فعله fElh, فعلى fElY, فاعول fEwl, فواعل fwAEl,

maany dictionary [134] to validate and filter the generated broken plurals. Plurals that are not in the dictionary are ignored as they are not Arabic words while other plurals are returned.

Sound plural conversion: The Arabic sound plural is a suffix which is added to the end of the Arabic word to indicate the plural. The suffix reflects the gender and the case. There are two types of Arabic sound plurals masculine and feminine. The first stage in generating these plurals is checking if the target plural of the ArSL plural is broken plural as discussed in the previous section. For non-broken plurals, the sign is converted into feminine sound plural if the ArSL sign word is feminine or ends with هـ *h* "Haa" or ة *p* "Taa marbutah" otherwise it will be converted into masculine sound plural.

ArSL sign is converted into Arabic feminine sound plural by adding ات *at* to the singular word. However, there are some exceptions as following:

- If the word ends with ة *p* "Taa marbutah", then we remove it and add ات *at* to the end of the word (Figure 7.6(a)).
- If the word ends with ي *Y* "Alif maqsurah", then:-
 - If word length is greater than three characters then ي *Y* "Alif maqsurah" is replaced with ي *y* and ات *at* is added (Figure 7.6(b)).
 - If the word consists of three characters and ي *Y* "Alif maqsurah" was originally و *w* "Waw" or ي *y* "Yaa", then return it to its original letter and add ات *at* to the word, otherwise ي *Y* "Alif

maqsurah” is replaced by و *w* ”Waw” and ات *at* is added (Figure 7.6(c-d)).

- If the word ends with اء *A* ’ ”Alif and hamza” and ء ’ ”Hamza” is original, then ات *at* is added (Figure 7.6(e)) else ء ’ ”Hamza” is replaced with و *w* ”Waw” and ات *at* is added to the word (Figure 7.6(f)).

Masculine sound plural adds two suffixes to the singular word: ون *wn* or ين *yn* based on the aspect of the word. We used the following rules in converting the ArSL signs into masculine sound plurals:-

- If the word ends with ى *Y* ”Alif maqsurah”, then replace it with ون *wn* (Figure 7.6(g)).
- If the noun ends with ي *y* Yaa, then replace it with ون *wn* or ين *yn* based on the word aspect (Figure 7.6(h)).

Pronoun agreement

ArSL uses indexing to refer to person, location, or object already signed in the sentence (more information about indexing can be found in chapter 5). Arabic attached pronouns are represented in ArSL using indexing. ArSL uses [اشارة] *[A\$Arp]* ”[SIGN]” reference sign to refer to the indexed sign in the sentence. Figure 7.7 shows an example of indexing in ArSL. As shown in the figure, the [اشارة] *[A\$Arp]* ”[SIGN]” refers to the indexed sign #محمد# *#mHmd#* ”#MO-

(a)	[ثلاثة] [معلم] [بنت] → FSP*	معلمات <i>mElmAt</i> “Teachers” [bnt][mElm][vLAvp] [GIRL][TEACHER][THREE]
(b)	[كثير] [مستشفى] → FSP	مستشفيات <i>mst\$fyAt</i> “hospitals” [mst\$fy][kvyr] [HOSPITAL][MUCH]
(c)	[عصا]++ → FSP	عصوات <i>ESwAt</i> “sticks” [ESA]++ [STICK]++
(d)	[مدى]++ → FSP	مديات <i>mdyAt</i> “ranges” [mdY]++ [RANGE]++
(e)	[انشاء]++ → FSP	انشاءات <i>An\$A'At</i> “constructions” [An\$A']++ [CONSTRUCTION]++
(f)	[صحراء]++ → FSP	صحراوات <i>SHrAwAt</i> “deserts” [SHrA']++ [DESERT]++
(g)	[مصطفى]++ → MSP*	مصطفون <i>mSTfwn</i> “Mustafas” [mSTfY]++ [MUSTAFA]++
(h)	[محامي]++ → MSP	محامون <i>mHAmwn</i> “lawyers” [mHAmY]++ [LAWYER]++ محامين <i>mHAmyn</i> “lawyers”

Figure 7.6: Examples of converting ArSL singular signs into Arabic sound plurals.
*FSP: Feminine sound plural, *MSP: Masculine sound plural

HAMMED#” that has an index of 1. This reference indicates that the signer is talking about Mohammeds’ brother.

To translate the ArSL indexing into Arabic attached pronouns, we apply Al-

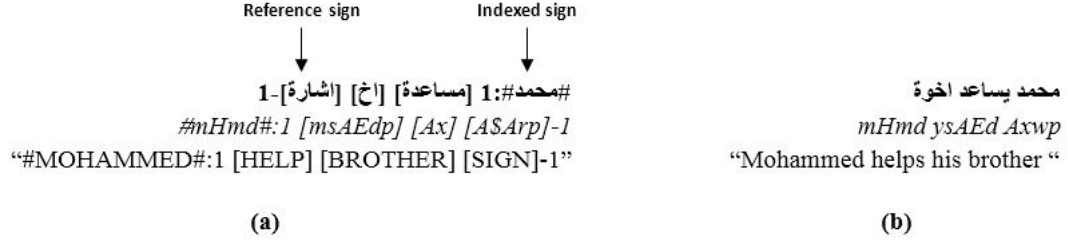


Figure 7.7: Representing attached pronoun in ArSL by indexing using *A\$Arp* "SIGN". (a) ArSL sentence, (b) Corresponding Arabic sentence.

gorithm 2.

Algorithm 2 adds attached pronoun to the word preceding the referencing sign.

The algorithm is based on the following rules:

- If the indexed sign is for the first person in the conversion, signer, then:
 - If the indexed sign is أنا *AnA* "I", then add *y* to the word preceding the reference sign (for example, [بيت] *[byt]* "[HOME]" → بيتي *byty* "my home").
 - If the indexed sign is نحن *nHn* "WE", then add نا *nA* to the word preceding the reference sign (for example, [بيت] *[byt]* "[HOME]" → بيتنا *bytnA* "our home").
- If the indexed sign is for the second person, addressee, then:
 - If the indexed sign is انت *Ant* "YOU", then add ك *k* to the word preceding the reference sign (for example, [بيت] *[byt]* "[HOME]" → بيتك *bytk* "your home").
 - If the indexed sign is اتما *AntmA* "YOU for dual", then add كما *kmA* to the word preceding the reference sign (for example, [بيت] *[byt]*

Algorithm 2 Translating ArSL indexing sign into Arabic attached pronoun algorithm

Require: *indxdSgn*: Indexed sign, *prevWord*: word preceding the reference sign

Ensure: *wrldWithPronoun*: *prevWord* with attached pronoun

```
1: switch indxdSgn do
2:   case أنا AnA "I"
3:     wrldWithPronoun = prevWord + ي y
4:   case نحن nHn "WE"
5:     wrldWithPronoun = prevWord + نا nA
6:   case انت Ant "YOU"
7:     wrldWithPronoun = prevWord + ك k
8:   case انتما AntmA "YOU for dual"
9:     wrldWithPronoun = prevWord + كما kmA
10:  case انتم Antm "YOU"
11:    if gender is masculine then
12:      wrldWithPronoun = prevWord + كم km
13:    else
14:      wrldWithPronoun = prevWord + كن kn
15:    end if
16:  case هو hw "HE" or indxdSgn is a singular 3rd person
17:    if gender is masculine then
18:      wrldWithPronoun = prevWord + ه h
19:    else
20:      wrldWithPronoun = prevWord + ها hA
21:    end if
22:  case هما AntmA "You" or indxdSgn is a dual 3rd person
23:    wrldWithPronoun = prevWord + هما hmA
24:  case هم hm "THEY" or indxdSgn is a plural 3rd person
25:    if gender is masculine then
26:      wrldWithPronoun = prevWord + هم hm
27:    else
28:      wrldWithPronoun = prevWord + هن hn
29:    end if
```

- "[HOME]" \rightarrow بيتكما *bytkmA* "your home").
- If the indexed sign is اتم *Antm* "YOU" and its gender is masculine, then add كم *km* to the word preceding the referene sign (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيتكم *bytkm* "your home"), else add كن *kn* (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيتكن *bytkn* "your home").
 - If the indexed sign is for the third person, then:
 - If the indexed sign is هو *hw* "HE" or singular, then add ه *h* (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيته *byth* "his home") if the gender is masculine otherwise add ها *hA* (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيتها *bythA* "her home").
 - If the indexed sign is هما *AntmA* "You" or is dual, then add هما *hmA* to the word preceding the reference sign (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيتهما *bythmA* "their home").
 - If the indexed sign is هم *hm* "THEY" or its gender is masculine, then add هم *hm* (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيتهم *bythm* "their home"), else add هن *hn* to the word preceding the reference sign (for example, [بيت] *[byt]* "[HOME]" \rightarrow بيتهن *bythn* "their home"),

Verb and subject agreement

ArSL uses the verb in present simple tense form with all tenses and it uses a dedicated sign to express the sentences' tense. Figure 7.8 shows an ArSL sentence in past tense with its equivalent Arabic sentence. As shown in the figure, the قبل

qbl "BEFORE" sign, which indicates that the sentence tense is in the past, is used at the beginning of the sentence while the verb sign, انتشار *Ant\$Ar* "SPREAD", is expressed in the noun form.

ArSL	<p> [قبل] [البكتيريا] ف- [انتشار] [من] [الجرح] <i>[qbl] [AlbktyryA] f-[Ant\$Ar] [mn] [AljrH]</i> [BEFORE] [BACTERIA] [SPREAD]-V [FROM] [WOUND] </p>
Arabic	<p> انتشرت البكتيريا عبر الجرح <i>Ant\$rt AlbktyryA Ebr AljrH</i> Bacteria spread through the wound </p>

Figure 7.8: An Example of the use of tense signs to express sentence tense in ArSL

To translate this sentence into Arabic, we first retrieve the past verb corresponding to انتشار *Ant\$Ar* "SPREAD" sign from ArSL dictionary. We modified the ArSL dictionary to include the past, present, and command forms of most of the dictionary' signs. The obtained verb form from the dictionary agrees only with the third masculine person subject. For example, the past and present of the [انتشار] *[Ant\$Ar]* "[SPREAD]" sign are انتشر *Ant\$rt* "SPREAD" and ينتشر *ynt\$rt* "SPREAD", respectively. These two verb forms do not agree with the first and second person nor with the feminine third person. To make the verb agree with the subject, we apply Algorithm 3 (Appendix B). This algorithm makes the verb agree with the subject in gender and number. We used the past and present verbs of the masculine 3rd singular person as input to this algorithm which returns the verb that agree with the subject in the target tense. Table 7.2 summarizes the rules used in this algorithm. An example of verb agreement is shown in Figure 7.9.

As shown in the figure, we first translated the [عطاء] $[ETA]$ "[GIVE]" sign verb into future tense and we removed the tense sign [قريبا] $[qrybA]$ "[SOON]". Then, we made the verb, سيعطي $syETy$ "will give", agrees with the subject [المرضات] $[AlmmrDA]$ "[NURSES]" in number and gender. Finally, the detached pronoun [انت] $[Ant]$ "[YOU]" is removed and the attached pronoun ك k is attached to the verb to result in the word سيعطيك $syETynk$ "will give you".

Table 7.2: Verb and subject agreement in person, number, and gender rules. P: Past verb of the masculine singular third person; V: Present verb of the masculine singular third person; V*: V without ي y at the beginning of the verb.

Verb	Subject	Masculine			Feminine		
		Singular	Dual	Plural	Singular	Dual	Plural
Past	1 st	P+ت	P+نا	P+نا	P+ت	P+نا	P+نا
	2 nd	P+ت	P+تما	P+تم	P+ت	P+تما	P+تن
	3 rd	P	P+ا	P+وا	P+ت	P+تا	P+ن
Present	1 st	أ+V*	ن+V*	ن+V*	أ+V*	ن+V*	ن+V*
	2 nd	ت+V*	ان+V*+ت	ون+V*+ت	ين+V*+ت	ان+V*+ت	ن+V*+ت
	3 rd	V	V+ا	V+ون	ت+V*	ان+V*+ت	ن+V*+ت
Future	1 st	سا+V*	سن+V*	سن+V*	سا+V*	سن+V*	سن+V*
	2 nd	ست+V*	ان+ست+V*	ون+ست+V*	ين+ست+V*	ان+ست+V*	ن+ست+V*
	3 rd	س+V	س+V+ا	س+V+ون	ست+V*	ان+ست+V*	ن+ست+V*

7.4.2 Phrase level transformation

The ArSL phrase differs from Arabic phrase in the structure and agreement between phrase words. At this translation level, we transfer the ArSL phrases into their Arabic equivalent. Unlike Arabic, ArSL uses the negation sign after the verb and adjective such as [لا] [يوجد] $[ywj d]$ $[lA]$ "[EXIST] [NO]". We transfer ArSL negation phrase into Arabic by moving the negation word before the verb or ad-

7.4.3 Sentence level transformation

After applying the transformations at word and phrase levels, we transform the ArSL sentence structure to meet the structure of the Arabic sentence. Table 7.3 shows the main differences between Arabic and ArSL sentences. Question sentences in ArSL usually starts with question mark and ends with question word. In addition, ArSL has limited question words. Transferring these words into their equivalent Arabic is performed at the word level (Section 7.4.1). Then, we change the structure by moving the question word to the beginning of the sentence and the question mark to the end of the sentence.

ArSL sentences can have object-verb structure which is uncommonly used in Arabic, so we transform this structure into verb-object structure. In addition, we transform the verb-subject structure of ArSL sentence into subject-verb Arabic structure which is more common than verb-subject.

Command sentences are expressed in ArSL by placing the pronoun at the beginning of the sentence followed by the main verb of the sentence. Words such as [لازم] [*lAzm*] "[MUST]" are used to indicate that this verb is compulsory. For example, the Arabic sentence اذهب الى الطبيب *A*hb AlY AlTbyb* "Go to the doctor" is expressed in ArSL as [انت] [*Ant*] [لازم] [*lAzm*] ف-[ذهب] [*f-[*hAb]*] [طبيب] [*Tbyb*] "[YOU] [MUST] [GO] [DOCTOR]." We transferred the ArSL command sentence into Arabic by removing the pronoun sign, [لازم] [*lAzm*] "[MUST]", and changing the verb into a command form. This transformation involves also verb agreement with the subject in person, gender, and number. We followed the same

Table 7.3: Differences between Arabic and ArSL sentences

	Arabic	ArSL
1	SVO	SVO or SOV
2	VOS	SVO or SOV
3	VS	SV
4	VSO	SVO or SOV
5	SOV	SVO or SOV
6	OSV	SVO or SOV
7	<i>Question word</i> + [Arabic Sentence] ?	? + [ArSL sentence] + <i>Question word</i>
8	<i>Negation</i> + [Arabic Sentence]	[ArSL Sentence] + $\begin{cases} [\text{لا يوجد}] [Layujid] \text{ "[NOT EXIST]"} \\ [\text{أبدا}] [Abda] \text{ "[NEVER]"} \\ [\text{لا}] [La] \text{ "[NO]"} \end{cases}$
9	$\begin{cases} [\text{قبل}] [qbl] \text{ [BEFORE]} \\ [\text{بعد}] [bed] \text{ [AFTER]} \end{cases} + \text{Time words}$	Time words + $\begin{cases} [\text{قبل}] [qbl] \text{ [BEFORE]} \\ [\text{بعد}] [bed] \text{ [AFTER]} \end{cases}$
10	Dual nouns	Gender + [Noun] + [اثنان] [Avnan] "[TWO]"(Human) [اثنان] [Avnan] "[TWO]" + Gender + [Noun] (Non-human)
11	Plural nouns	Gender + [Noun] + [ثلاثة] [vlatp] "[THREE]" (Human) Noun + [كثير] [kayr] "[MUCH]"(Non-Human)

rules discussed in Section 7.4.1 to make the verb and subject agrees in person, gender, and number.

7.5 Post-processing

Some ArSL signs are translated in the previous translation stages into more than one Arabic words. For example, ArSL plural sign can be translated into two forms of Arabic masculine sound plural and selecting among these candidate words depends on the plural word aspect. To select among these words and preserve the meaning of the sentence, we employed statistical language model. We built a 4-gram language model with KenLM toolkit [129]. We used KenLM (with Kneser-Ney smoothing and default backoff) because it uses less memory and is faster [129] than SRILM [135] and IRSTLM [136]. The candidate words are scored

using KenLM, and the high score word is selected.

7.6 Experimental results

We used the ArSL corpus developed in this work (chapter 6) to evaluate the proposed translation system. The corpus consists of 600 sentences divided into three parts training (70%), validation (15%), and testing (15%). Each Arabic sentence in the corpus is manually translated into ArSL by two expert human translators. We evaluated our machine translation system manually and automatically. In manual evaluation, three Arabic native speakers evaluated the translation of each sentence as *understandable*, *somehow understandable*, and *not understandable*. *Understandable* metric is used with sentences that preserve the meaning of the source Arabic sentence and meet the grammar and structure of Arabic. *Somehow understandable* metric is used mainly with sentences that have a problem in the grammar or structure but the meaning of the sentence is preserved. *Not understandable* metric is used for sentence that has a different meaning than the source Arabic sentence. The manual evaluation results are 80%, 12%, and 8% for *understandable*, *somehow understandable*, and *not understandable* metrics, respectively. These results show that our translation system provides an acceptable translation for approximately 92% of the translated sentences.

An example of sentences evaluated as *understandable*, *somehow understandable*, and *not understandable* are shown in Figure 7.10. As shown in the figure, the meaning of the sentences evaluated as *understandable* is correct and the gram-

mar and structure of the sentence correspond to Arabic. Sentences evaluated as *somehow understandable* have an understandable meaning but some words are missed or extra characters are added. *Not understandable* sentences either miss some words that are important to convey the meaning of the sentence or have an issue in the structure and grammar of the sentence.

Missing words, such as pronouns, in the resulting sentence is due to the missing of these words in the source ArSL sentence due to the unavailability of these words in the language vocabulary. For example, the Arabic sentence *يعاني القفص الصدري من كسور* *yEAny AlqfS AlSdry mn kswr* "The rib cage suffers from fractures" is translated into ArSL as ++[كسر][مشكلة][القفص الصدري] *[AlqfS AlSdry] [m\$klp] [ksr]++* "[RIB CAGE] [PROBLEM] [FRACTURE]++" with missing the word *يعاني* *yEAny* "suffer" which is important to translate the ArSL sentence back into Arabic. In addition, the morphological analyzers that are used in analyzing the sentence failed in extracting the gender of some words correctly. For example, the gender of [بكتيريا] *[bktyryA]* "[BACTERIA]" word is incorrectly recognized by the morphological analyzer as male in [لا][ضار][البكتيريا][نوع][كل] *[kl] [nwE] [AlbktyryA] [DAr] [lA]* "[ALL] [TYPE] [BACTERIA] [Harmful] [NO]" sentence and consequently we made the next word *ضارة* *DAr* "Harmful" agrees with that word in gender whereas it should be *ضارة* *DArp* "Harmful".

We also used automatic evaluation metrics in evaluating our work. We used BiLingual Evaluation Understudy (BLEU), Word Error Rate (WER), and Trans-

Arabic reference	ArSL sentence	Output Arabic sentence
(a) سينتشر السم في جسمك بعد ساعة synt\$tr Alsm fy jsmk bEd sAEp The poison will spread in your body after an hour.	[ساعة] [بعد] [السم] ف- [انتشار] [في] [انت] [جسم] [sAEp] [bEd] [Alsm] f- [Ant\$Ar] [fy] [>nt] [jsm] [HOUR] [AFTER] [POISON] V- [SPREAD] [IN] [YOU] [BODY]	سينتشر السم في جسمك synt\$tr bEd sAEh Alsm fy jsmk The poison will spread in your body after an hour.
(b) نستخدم أشعة الليزر لفتح شرايين القلب nstrxdm >\$Ep Allyzr lftH \$rAym Alqlb We use X-ray to open the arteries of the heart.	[نحن] ف- [استخدام] [أشعة الليزر] [السبب] ف- [فتح] [شرايين] ++ [القلب] [nHtn] f- [AstxdAm] [>\$Ep Allyzr] [Albb] f- [ftH] [\$ryAn] ++ [Alqlb] [WE] V- [USE] [X-RAY] [REASON] V- [OPEN] [ARTERIES] ++	نستخدم أشعة الليزر بسبب لفتح الشرايين القلب nstrxdm A\$Eh Allyzr bbb nftH A\$ArAym Alqlb We use X-ray because we open the arteries of the heart.
(c) يعاني القفص الصدري من كسور yEAAny AlqtS ALSdry mn kswr The rib cage suffers from fractures.	[القفص الصدري] [مشكلة] [كسر] ++ ++ [AlqtS ALSdry] [m\$klp] [ksr] [RIB CAGE] [PROBLEM] [FRACTURE] ++	القفص الصدري مشكلة كسور AlqtS ALSdry m\$klh kswr The rib cage problem fractures

Figure 7.10: Samples of sentences manually evaluated as (a) Understandable, (b) Somehow understandable, and (c) Not understandable.

lation Error Rate (TER) metrics [137] to evaluate our translation. BLEU performs exact n-gram (we used 4-gram) matching between candidate and reference sentences [138]. We used 4-gram because the average number of words per sentence in our corpus is about four words. BLEU score ranges from 0 to 1, where 1 indicates an exact match between the candidate and reference translations. The WER is based on the Levenshtein distance between the candidate and the reference sentence [139], whereas the TER measures the amount of post-editing required to change a system output to exactly match a reference translation [140].

We evaluated our work (the output sentences) against Arabic source sentences of the ArSL sentences. We obtained results of 0.39, 0.49, and 0.45 using the BLEU, WER, and TER metrics, respectively. We consider these results acceptable for translating ArSL sentence into Arabic because Arabic sentence can have different ArSL translations.

7.7 Conclusions

In this chapter, we presented our research results on machine translation of ArSL to Arabic. To our knowledge, all the available ArSL recognition systems map the recognized signs to Arabic words. This direct translation preserves the structure and grammar of ArSL which makes it not fully understandable for Arabic readers as Arabic and ArSL have different structure and grammar. To our knowledge, no works have addressed the problem of translating ArSL sentences into Arabic.

The input ArSL sentence to be translated into Arabic is morphologically, syn-

tactically, and semantically analyzed. The proposed translation system performs the translation at the word, phrase, and sentence levels. This results in sentences that meet the structure and grammar of Arabic. We evaluated our work manually by three Arabic native speakers and found that more than 80% of the translated sentences are accurately translated into Arabic. In addition, we automatically evaluated the translation output, and results of 0.39, 0.49, and 0.45 were obtained using the BLEU, WER, and TER metrics, respectively.

CHAPTER 8

MACHINE TRANSLATION FROM ARABIC TO ARABIC SIGN LANGUAGE

We propose in this chapter a rule-based machine translation system to translate Arabic text into ArSL. The proposed system performs morphological, syntactic, and semantic analysis on the input Arabic sentence to translate it into a sentence with the grammar and structure of ArSL. We evaluate the translation system on KArSL corpus and find that our translation system provides an accurate translation for more than 80% of the translated sentences.

8.1 Introduction

ArSL is a full natural language that has structure, word order, and lexicon that differ from those of Arabic. Thus, translation between Arabic and ArSL is challenging. This problem is a complete machine translation problem because ArSL and Arabic are two different languages with different structures and grammars. To our knowledge, the majority of available machine translation systems for ArSL are at the word level, where a direct mapping is made between the word and its equivalent sign. This type of translation results in loss of meaning of the sentence because it ignores the structure and grammar of the target language. Thus, a machine translation system between Arabic and ArSL that preserves the structure and grammar of both languages is needed.

The translation of Arabic text into ArSL is important for the full integration of the deaf into their communities [10]. Translation systems can be used to translate messages, addresses, and educational materials into ArSL without involving expert translators. The input text can be text-generated from speech or text recognition systems. It can also be used with smart phones by translating the incoming messages into ArSL.

We developed a semantic rule-based machine translation system between Arabic and ArSL. The proposed system translates Arabic in the form of text into ArSL by performing lexical, syntactic, and semantic analyses on the Arabic sentence and applying a set of transformation rules to generate its equivalent in ArSL.

8.2 System architecture

We developed a semantic rule-based machine translation system from Arabic into ArSL. The architecture of the proposed system is a pipeline of three main translation stages (morphological analysis, syntactic analysis, and ArSL generation), as illustrated in Figure 8.1.

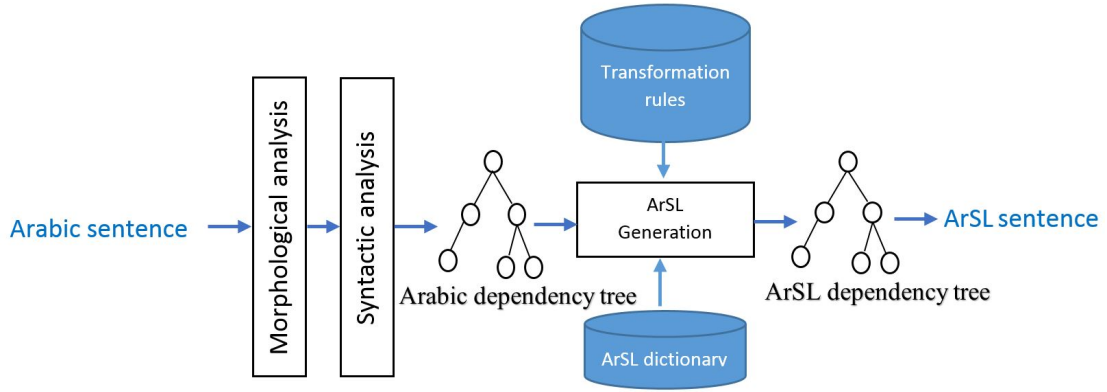


Figure 8.1: Architecture of the translation system

The input to the system is an Arabic sentence, and the output is an ArSL sentence represented by the gloss notation and displayed as a sequence of GIF images. The sentence is morphologically analyzed to extract the morphological information of each of its words. The output of this stage is syntactically analyzed using a dependency parser to obtain the relation between the words in the sentence. This stage results in the construction of the parse tree. The generation phase transforms the Arabic parse tree into its equivalent tree in ArSL by applying the transformation rules. The transformation rules are built based on the differences between Arabic and ArSL discussed in chapter 2. This phase also involves lexically translating Arabic phrases and words into their equivalent signs

in ArSL. To handle the out-of-vocabulary (OOV) problem that results from the ArSL vocabulary size limitation, we used the synonym of the OOV word. To ensure that the synonym word preserves the meaning of the sentence, we applied a statistical language model in the synonym selection.

8.2.1 Morphological analysis

Arabic is a complex language that presents many challenges to NLP [141]. Arabic is a highly inflected language, where each Arabic word can be composed of stem, affixes, and clitics. For example, the word *واستخرجونها* *wasayAx*wnhA* "and they extract it" consists of two proclitics (*وا* *wa* and *يست* *yst*), one stem (*خرجون* *xrjwn*), and one enclitic (*ها* *hA*). There are eight inflectional features for each Arabic word: *aspect*, *mood*, *gender*, *person*, *voice*, *state*, *case*, and *number* (for more information regarding these features, see [141]).

Arabic is a derived language, where a new word with different meaning can be formed from another word [141]. For example, the word *كاتب* *kAtb* "writer" can be derived from the word *كتب* *ktb* "write." The variety of Arabic dialects adds another challenge to NLP. We used modern standard Arabic (MSA) in this work, which is the language of journals, education, and news in nearly all Arabic countries.

The MADAMIRA toolkit [128] is used to analyze the sentence and extract all words' features. MADAMIRA is a morphological analyzer used for the morphological analysis and disambiguation of Arabic text. MADAMIRA can perform a

set of NLP tasks, such as spelling correction, lemmatization, stemming, diacritization, morphological disambiguation, glossing, POS tagging, and tokenization. We run MADAMIRA on the transliterated Arabic sentences and obtain a list of analyses for each word, which specifies all possible morphological interpretation of that word in addition to its morphological features. The words of a sentence with its POS tag are used as the input for the syntactic analysis stage, and other morphological features are used in the generation stage to generate an ArSL sentence.

8.2.2 Syntactic analysis

The words of the tokenized sentence with their POS tag, which are produced by MADAMIRA, are used in the syntactic analysis stage to extract the sentence structure. The sentence structure is represented as a parse (or syntax) tree using CamelParser [142]. CamelParser is an Arabic syntactic dependency parser that uses MaltParser [143] to produce morphologically enriched syntactic dependencies [142]. Figure 8.2 shows the dependency tree of the Arabic sentence *قد يصاب الطفل بالحمى بعد التطعيم* *qd ySAb AlTfl bAlHmY bEd AltTEym* "Child may get fever after vaccination" parsed by CamelParser. The tree shows the relations and POS tags produced by CamelParser in the CATiB annotation [15].

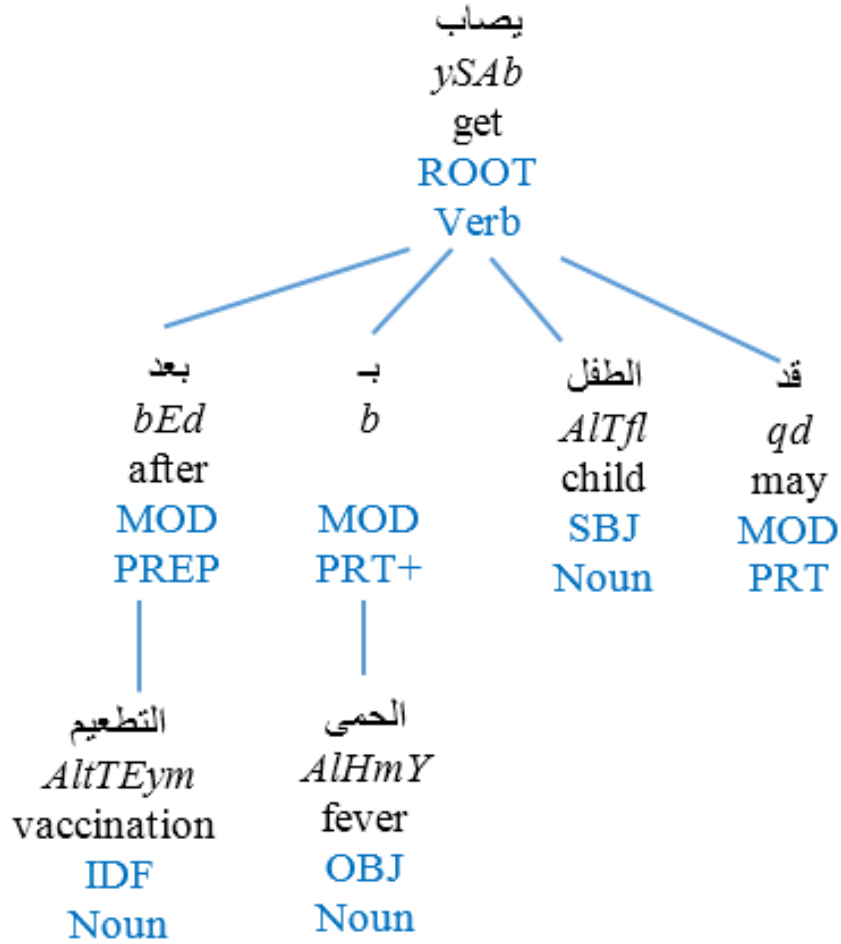


Figure 8.2: Dependency tree generated by CamelParser for the sentence *قد يصاب الطفل بالحمى بعد التطعيم* *qd ySab AlTfl bAlHmY bEd AltTEym* "Child may get fever after vaccination."

8.2.3 ArSL generation

The morphological features with the parse tree of the Arabic sentence are used to generate the ArSL sentence. In this stage, first, the lexical transformations are applied to the sentence phrases and words, and then, the transformation rules are applied to generate the equivalent ArSL sentence.

The phrases and words of the sentence are lexically transformed into its ArSL

equivalents using the ArSL dictionary. The phrases of the sentence are extracted in the syntactic analysis stage. First, these phrases are lexically translated into ArSL because certain Arabic phrases have a single equivalent ArSL sign. For example, the Arabic phrase التأمينات الاجتماعية والضمان الاجتماعي *Alt>mynAt ALAjtmAEyp wAlDmAn ALAjtmAEy* "social insurance and social guaranty" has an equivalent sign in the ArSL dictionary that removes the need to translate its words separately. The lexical transformer moves to the lower level of the phrase (words and tokens) when the phrase does not have an equivalent sign in the dictionary. ArSL typically uses the same sign for all word inflections. For example, the words مسافر *msAfr* "passenger", سفر *sfr* "travel (noun)", and يسافر *ysAfr* "travel (verb)" have only one equivalent sign in the ArSL dictionary, which is for the word [سفر] *[sfr]* "[TRAVEL] (noun)." To address this problem, we used the lemma of the Arabic words because all words' inflections share the same lemma. Names and numbers are not translated because they are finger-spelled.

The ArSL dictionary is limited to approximately 3,200 signs, which causes the OOV problem. We circumvent this problem by using the synonym of the OOV words with Arabic WordNet (AWN) [144]. AWN is a semantic database of Arabic words that are grouped into sets of synonyms. AWN also provides definitions of the word with its category, such as noun, verb, or adverb. It returns a set of synonyms for each word, which may not be related to the sentence context. To address this issue and select from the AWN synonyms, first, we use the word that is diacritized by the MADAMIRA toolkit with its POS tag to retrieve the

synonyms from AWN. This step helps to limit the synonym words. Then, we use a statistical language model to select the synonym that preserves the meaning of the sentence. We built a 3-gram language model with the KenLM toolkit [129] using the Arabic corpus developed in [145], which consists of 5,637,151 words. We use KenLM (with Kneser-Ney smoothing and default backoff) because it uses less memory and is faster [129] than SRILM [135] and IRSTLM [136]. The synonym words are scored using KenLM, and the closest synonym to the source word in meaning is selected.

After the lexical transformation, the rule transformation is applied. The morphological features of the words in the sentence with the parse tree, which was generated in the morphological and syntactic stages, are transformed into its equivalent tree in ArSL by applying the rules based on the mapping of Arabic to ArSL (see Chapter 2). The transfer rules (Table 8.1) cover the mappings at three levels: word, phrase, and sentence.

The rules that are related to the word's inflectional features, such as gender and number, are applied at the word level. For example, the word طالبان *TAlbtAn* "two girl students" is translated into [بنت] [طالب] [اثان] *[bnt] [TAlb] [AvnAn]* "[GIRL] [STUDENT] [TWO]" by applying "R1" in Table 8.1. The word [بنت] *[bnt]* "[GIRL]" is added before the word [طالب] *[TAlb]* "student" because it is a feminine noun, whereas the word [اثان] *[Avnan]* "[TWO]" is added at the end because the original noun is dual.

Then, the transfer rules are applied to the sentence clauses ("R2-R3" in Table

Table 8.1: The main transfer rules from Arabic to ArSL.

R1	<p>IF input is an Arabic <i>word</i> with its morphological features {Gender:<i>gen</i>, Number:<i>num</i>, Rationality:<i>rat</i>} THEN transfer it into: <PluralSign01> + <GENDER> + [SIGN] + <PluralSign02></p> <p>IF (<i>num</i> = <i>dual</i> and <i>rat</i> = <i>Non-human</i>) THEN <PluralSign01> = “[اثنان]” // [AvnAn][TWO] IF (<i>gen</i> = <i>Feminine</i>) THEN <GENDER> = “[بنت]” // [bnt][GIRL] IF (<i>num</i> = <i>dual</i> and <i>rat</i> = <i>human</i>) THEN <PluralSign02> = “[اثنان]” // [AvnAn][TWO] ELSE IF (<i>num</i> = <i>plural</i> and <i>rat</i> = <i>human</i>) THEN <PluralSign02> = “[ثلاثة]” // [vAvp][THREE] ELSE IF (<i>num</i> = <i>plural</i> and <i>rat</i> = <i>Non-human</i>) THEN <PluralSign02> = “[كثير]” // [kyyr][MUCH]</p> <p>[SIGN] = The equivalent ArSL sign of Arabic <i>word</i></p>
R2	<p>IF Arabic phrase starts with negation THEN [ArSL phrase] + (“لا يوجد”) // [Lywjd][NOT EXIST] OR “[أبدا]” // [Abda][NEVER] OR “[لا]” // [LA][NO]</p>
R3	<p>IF Arabic phrase starts with time modifiers THEN [ArSL phrase]+ (“قبل”) // [qbl][BEFORE] OR “[بعد]” // [bEd][AFTER] OR “[أثناء]” // [AvnA][DURING]</p>
R4	IF input is an Arabic sentence and its category is question THEN transfer it into [?]+[ArSL sentence]+[Question sign]
R5	IF input is an Arabic sentence with structure SOV THEN Reorder words to SVO
R6	IF input is an Arabic sentence with structure VOS THEN Reorder words to SVO
R7	IF input is an Arabic sentence with structure VS THEN Reorder words to SV
R8	IF input is an Arabic sentence with structure VSO THEN Reorder words to SVO
R9	IF input is an Arabic sentence with structure OV THEN Reorder words to VO
R10	<p>IF input is a verbal Arabic sentence in tense ts THEN transfer it into [TenseSign]+[ArSL sentence] IF (<i>ts</i> = <i>past</i>) THEN [TenseSign] = “[أقبل]” // [qbl][BEFORE] ELSE IF (<i>ts</i> = <i>present</i>) THEN [TenseSign] = “[الآن]” // [AlAn][NOW] ELSE IF (<i>ts</i> = <i>future</i>) THEN [TenseSign] = “[أقرب]” // [qrybA][SOON]</p>
R11	<p>IF input is a command Arabic sentence in tense ts THEN transfer it into [pronoun] + “[لازم]” // [LAzm][MUST] + [ArSL sentence]</p>
R12	IF Arabic word is in {Relative, conditional, particles, demonstrative} and not in ArSL dictionary THEN remove it from the sentence
R13	IF Arabic word is proper noun or number THEN fingerspell it
R14	IF Arabic word or its synonym is unavailable in the ArSL dictionary THEN fingerspell it
R15	IF the Arabic word includes possessive/attached pronouns THEN split it and add detached pronoun after the sign

8.1). For example, the negation rule involves moving the negation character to the end of the clause; for instance, the clause *غير سعيد gyr sEyd* ”unhappy” is translated into [لا] [سعيد] [sEyd] [LA] ”[HAPPY] [NO],” where the negation character *غير gyr* is moved to the end of the clause and replaced by its ArSL equivalent sign [لا] [LA] ”[NO].”

Finally, the transfer rules are applied to the entire Arabic sentence (“R4-R11” in Table 8.1). The sentence structure will be changed to match the structure of the ArSL sentence. Additionally, new words may be added to the sentence, such as time words, whereas other words may be discarded, such as prepositions. Figure 8.3 shows an example of an Arabic question sentence transformed into

ArSL. As shown in Figure 8.3, the Arabic question sentence has the VO structure. This structure is transformed into the OV ArSL structure. The word [قبل] *[qbl]* "[BEFORE]" is added to the sentence because the main verb in the sentence is in the past tense. In addition, the question sign is moved to the front of the sentence, whereas the question word is moved to the end.

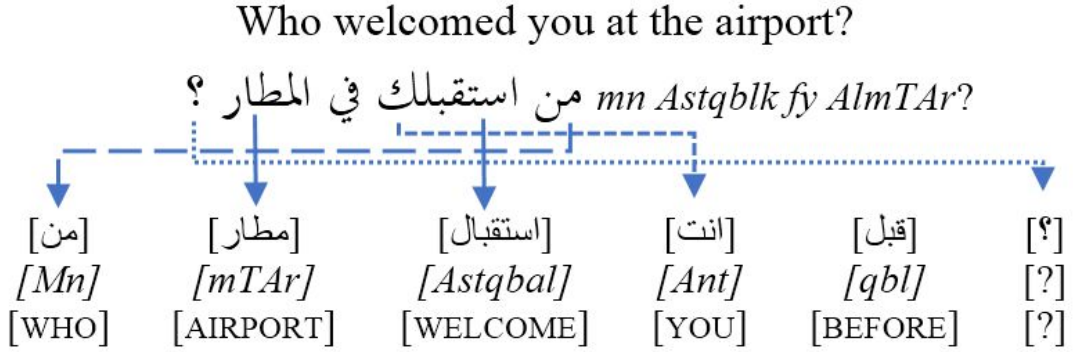


Figure 8.3: Arabic sentence translated into ArSL.

The final representation of ArSL can be in the form of ArSL gloss annotation and a sequence of GIF images [146]. Figure 8.4 shows an example of an Arabic sentence translated into ArSL.

8.3 Experimental work

Our translation experiments and results are presented in this section. Our parallel corpus consists of 600 sentences related to the health domain. The sentences of the database are real-life sentences that are used in medical centers. These sentences cover nearly all Arabic sentence types (e.g., verbal, nominal, questions). There are 3,294 words in our corpus, and the average sentence length is 5.5 words.

Arabic:

سيتم ازالة الحصوة باستخدام اشعة الليزر
sytm AzAlp AlHSwp bAstxdAm A\$Ep Allyzr
The stone will be removed using a laser

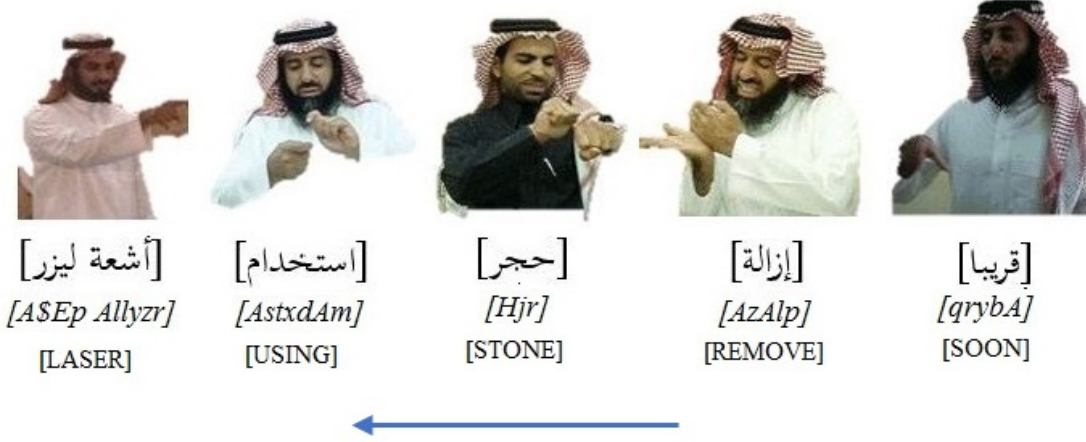


Figure 8.4: Arabic sentence translated into ArSL and represented by the gloss and images.

The sign language portion of the corpus consists of two translations of each sentence translated by one deaf person and one expert bilingual translator. The two translations have lexical or structural differences, but both preserve the meaning of Arabic sentences. This variance may be attributed to how the translator wants to convey the meaning of the Arabic sentence to the deaf. Figure 8.5 shows an example of two translations of an Arabic sentence. As shown in Figure 8.5, both translations have the same meaning but differ in structure and the use of additional words to clarify the meaning to the deaf. We divided the corpus into training (70%), development (15%), and testing (15%) sets. We used the training part to extract the ArSL rules, whereas the testing part was used to evaluate the translation system. The translation output was manually evaluated by experts and automatically evaluated using different evaluation metrics.

Arabic	<p>تجنب الاغذية المسببة للإسهال</p> <p><i>tjnb AlAg*yp Almsbbp ll<shAl</i></p> <p>Avoid foods that cause diarrhea</p>
ArSL	<p>[ممنوع] [أكل] [سبب] [إسهال]</p> <p><i>[mmmwE] [Akl] [sbb] [AshAl]</i></p> <p>[FORBIDDEN] [FOOD] [CAUSE] [DIARRHEA]</p>
	<p>[في] [أكل] [سبب] [إسهال] [أفضل] [وقف]</p> <p><i>[fy] [Akl] [sbb] [AshAl] [>fDl] [wqf]</i></p> <p>[IF] [FOOD] [CAUSE] [DIARRHEA] [BETTER] [STOP]</p>

Figure 8.5: Different manual translations of an Arabic sentence

8.3.1 Manual evaluation

All Arabic sentences in the testing set were fed into our translation system, and the translated ArSL sentences were manually evaluated by two ArSL experts. The outputs of the translation system were evaluated and divided into three groups based on their translation quality: good, fair, and poor.

The good metric is used with sentences that are grammatically correct and have the correct meaning. An example of the translation that is evaluated as good is shown in Figure 8.6(a). The fair metric is typically used for a sentence that has the correct meaning but misses certain grammatical details. Figure 8.6 (b) shows an example of a sentence with a fair evaluation. Removing the preposition [منذ] *[mn*]* " [SINCE]" adds ambiguity regarding the next word [ولادة] *[wlAdp]* " [BIRTH]" and its relation to the sentence, but the sentence can be understood by the deaf person. The poor metric is used with sentences that have partially or

	Arabic sentence	ArSL sentence
(a)	يرتبط الادمان بمرض نقص المناعة <i>yrtbT AlAdmAn bmrD nqS AlmnAEp</i> Addiction is associated with AIDS	[ادمان] [علاقة] [مرض] [نقص مناعة] [AdmAn] [ELAqp] [mrD] [nqS mnAEp] [ADDICTION] [RELATION] [DISEASE] [AIDS]
(b)	يعاني الطفل من الاعاقه السمعيه منذ الولاده <i>yEAny AlTf mn AlAEAqh AlsmEyh mn* AlwlAdh</i> The child suffers from hearing impairment since birth	[طفل] [تالم] [اعاقه سمعيه] [ولاده] [Tf] [tAlm] [AEAqp smEyp] [wlAdp] [CHILD] [SUFFERS] [HEARING IMPAIRMENT] [BIRTH]
(c)	هل يعاني احد افراد اسرتك من التورم ؟ <i>hl yEAny AHd AfrAd Asrtk mn Altwrm ?</i> Does anyone of your family suffer from tumor?	[هل] [تورم] [تالم] [اسرة] [انت] [شخص] [الاحد] [؟] [?] [AlAHd] [\$xS] [Ant] [Asrp] [tAlm] [twrm] [hl] [?] [SUNDAY] [PERSON] [YOU] [FAMILY] [SUFFER] [TUMOR] [DOES]

Figure 8.6: Samples of the resulting translations

completely incorrect translation. Figure 8.6 (c) shows an example of a sentence evaluated as a poor translation. The word احد *AHd* "someone" in this example is translated as [الأحد] *[Al>Hd]* "[SUNDAY]," which makes the sentences convey incorrect meaning. In addition, the phrase احد افراد اسرتك *AHd AfrAd Asrtk* "One of your family" is a difficult composition for the rule-based translation.

The manual evaluation results are 82%, 8%, and 10% for good, fair, and poor, respectively. These results demonstrate that our translation system provides good translation for approximately 82% of the translated sentences.

Based on the manually evaluation results, the sentences that obtain poor evaluation have grammatical problems. This result is attributed to two main reasons: the morphological analyzer and parser. Both tools are trained on an Arabic news corpus, which is considerably different from the type of data that we used, which are more conversational and related to the health domain. For example, the aspect feature of the word اسال *AsAl* "ask" in the sentence اسال الموظف عن رقم ملفك *AsAl AlmwZf En rqm mlfk* "Ask the employer about your file number" is not recognized by the morphological analyzer as a command, which increases the difficulty of determining the verb tense in the sentence. In addition, the subject in

this sentence is recognized by the morphological analyzer as the speaker, which is incorrect. However, the majority of the translation errors are related to the parser. The parsing was incorrect for certain sentences, as shown in Figure 8.7. The word **الطبيب** *AlTbyb* "doctor" in this tree is incorrectly identified by the parser as the subject of the sentence. This type of error is common in Arabic parsing [147].

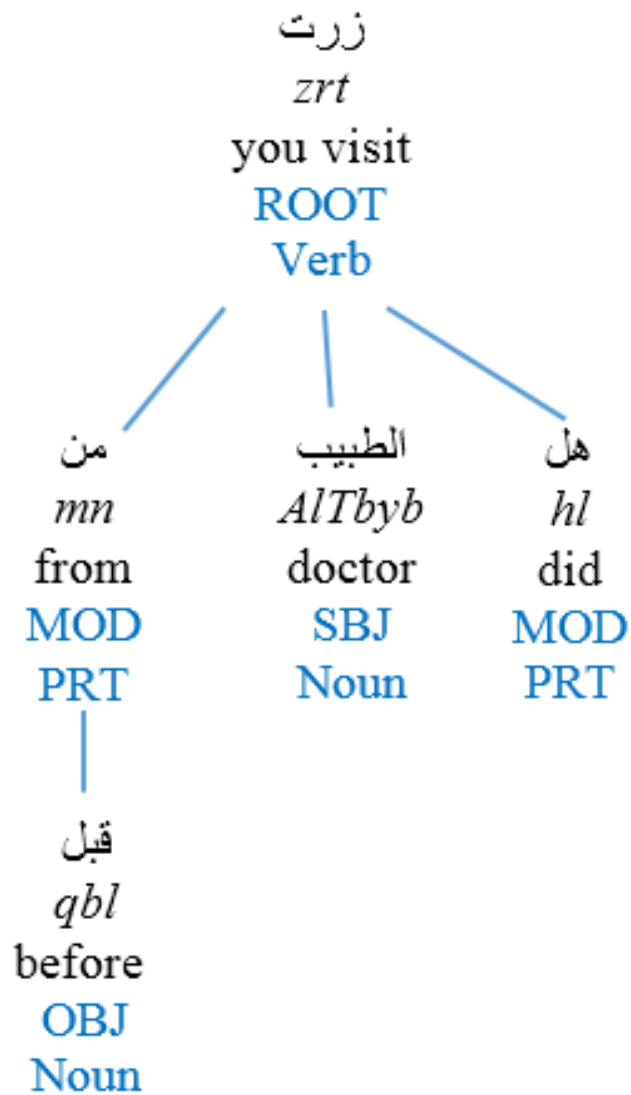


Figure 8.7: Example of inaccurate parsing

8.3.2 Automated evaluation

Manual evaluation is more accurate than automatic evaluation [148]. However, manual evaluation is typically subjective and expensive. Automatic evaluation helps to make comparisons with other works. We used the BLEU, WER, and TER metrics [137] to evaluate our translation.

We evaluated our translation output against two human translation references. We excluded the brackets and punctuations during the evaluation to avoid unnecessary matching. The words in the resulting ArSL sentences are in their lemma form because the ArSL dictionary uses the Arabic word lemma to annotate the sign image (Chapter 5). In contrast, some of the words in the human translated sentences are not in the lemma form. However, using the word or its lemma is correct as ArSL uses the sign for all word derivations. We first evaluated the output ArSL sentences against the human translated references and results of 0.10, 0.70, and 0.71 were obtained using the BLEU, WER, and TER metrics, respectively. These metrics use strict word and phrase matching between the output of the translation system and the reference sentences and ignores that ArSL uses the same sign for all the word derivations which may justify the high error rate. Therefore, we performed the evaluation using the lemma of the reference sentence which improved the BLEU to 0.35 and reduced the WER and TER to 0.55 and 0.53, respectively. These results are acceptable for ArSL translation considering that ArSL accepts different translations for the same sentence and uses the same sign for different derivations of a word. In addition, certain reference sentences

were freely translated without constraint of the language grammar rules.

8.4 Conclusions

We presented our research results on the machine translation of Arabic to ArSL. We developed a rule-based machine translation system to translate Arabic text into ArSL. The input Arabic sentence to be translated into ArSL is morphologically, syntactically, and semantically analyzed. This analysis results in sentences that satisfy the structure and grammar of ArSL. We evaluated our work using our corpus and found that our translation system provided good translation for more than 80% of the translated sentences. We also automatically evaluated the translation output, and results of 0.35, 0.55, and 0.53 were obtained using the BLEU, WER, and TER metrics, respectively.

CHAPTER 9

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This chapter summarizes of the contributions and findings of this dissertation. Section 9.1 provides conclusion remarks and highlights the main achievements of this dissertation. Section 9.2 provides directions of future research.

9.1 Conclusions

Sign language is the main communication medium used by the deaf. Sign language is not international and there are many sign languages in the world. ArSL is one of the sign languages which are used in Arabian countries. It was proposed in 1999 by LAS and ALECSO to unify the sign languages in Arabian countries. ArSL is an independent language with structure, grammar, and vocabulary that differ from Arabic. The differences between the two languages increases the need for machine translation system. This system is required to translate Arabic sentences into

equivalent ArSL sentences. In addition, it is required to translate ArSL sentences resulting from ArSL recognition systems into meaningful Arabic sentences.

In this thesis, we surveyed the techniques used for ArSL translation. Based on the conducted survey on machine translation of ArSL, we can conclude the following:-

- Most surveyed techniques perform direct translation between Arabic and ArSL, which is inadequate because the structure and grammar of both languages are different.
- To our knowledge, no work covered the translation of the ArSL sentences resulting from ArSL recognition systems into Arabic.
- Semantic translation is essential for an accurate machine translation of Arabic into ArSL, however, to our knowledge few works employed semantics in translating Arabic text into ArSL.
- Limited datasets are used in the surveyed systems due to the lack of a comprehensive corpus for ArSL.
- Most of the systems, especially the old ones, are evaluated by experts. This may be attributed to the nature of the problem and to the lack of automated evaluation techniques for such systems.
- Due to the lack of benchmarking databases, the comparison between different techniques is not reported.

To address these points,

- We summarized the grammar rules of ArSL:

We summarized the structural and grammatical differences between Arabic and ArSL. The differences are at word, phrase, and sentence levels. The summarized differences can be used to form the translation rules between ArSL and other languages.

- Developed a gloss annotation system to represent ArSL textually:

ArSL is a visual language that uses body language to convey meaning. We proposed in this work a textual gloss annotation system to represent ArSL textually. The proposed system follows the guidelines of [100] for ASL glossing with several changes to suite ArSL. The proposed gloss system can be used to represent the manual and non-manual features of ArSL textually.

- Proposed a benchmarking database that can be used for ArSL translation and recognition:

The availability of a comprehensive benchmarking database for ArSL is one of the challenges of the automatic translation of ArSL. We presented in this work a parallel corpus consists of 600 Arabic sentences and each sentence is translated into ArSL by two ArSL experts. The sentences of the database are real-life sentences that are used in medical centers. These sentences cover nearly all Arabic sentence types (e.g., verbal, nominal, questions). There are 3,294 words in our corpus, and the average sentence length is 5.5 words. The sign language portion of the corpus consists of two translations of each sentence translated by one deaf person and one expert bilingual translator.

The corpus is divided into training (70%), validation (15%), and testing (15%).

- Proposed a bidirectional machine translation system between ArSL and Arabic:

We developed a rule-based machine translation system to translate Arabic text into ArSL. The input Arabic sentence to be translated into ArSL is morphologically, syntactically, and semantically analyzed. This analysis results in sentences that satisfy the structure and grammar of ArSL. We evaluated our work using the testing part of the bilingual corpus developed in this work and found that our translation system provided good translation for more than 82% of the translated sentences. We also automatically evaluated the translation output, and results of 0.35, 0.55, and 0.53 were obtained using the BLEU, WER, and TER metrics, respectively.

We also proposed machine translation system to translate the ArSL sentences resulting from ArSL recognition systems into Arabic. To our knowledge, all the available ArSL recognition systems map the recognized signs to their equivalent Arabic words and preserve the structure and grammar of ArSL which makes it not fully understandable for Arabic readers as Arabic and ArSL have different structures and grammars. To our knowledge, no works have addressed the problem of translating ArSL sentences into Arabic. The input ArSL sentence to be translated into Arabic is morphologically, syntactically, and semantically analyzed. The proposed translation

system performs the translation at the word, phrase, and sentence levels. This results in sentences that meet the structure and grammar of Arabic. We evaluated our work using our corpus and found that about 80% of the translated sentences are accurately translated into Arabic. We also automatically evaluated the translation output, and results of 0.39, 0.49, and 0.45 were obtained using the BLEU, WER, and TER metrics, respectively.

- We shared on the work in ArSL recognition for possible integration of ArSL translation and recognition. This is reported in my vitae publications.

9.2 Future Directions

The work presented in this dissertation can be extended in different directions. Some extensions are highlighted in the following points:

- **Enhancing the proposed machine translation methods:** In this work, we used rule-based machine translation method for translation between Arabic and ArSL. We chose this method because it is a specific domain problem and due to the lack of parallel corpus. This method can be enhanced by combining it with one of the corpus-based machine translation techniques such as statistical machine translation. The hybridization between RBMT and CBMT technique showed significant improvement in the accuracy of the machine translation results between spoken languages and we expect similar improvement with ArSL translation.

- **Using other machine translation techniques:** There are other techniques that have not been used for ArSL machine translation such as statistical and neural machine translation techniques. Using these techniques is related to extending the parallel corpus of ArSL as will be discussed next. These techniques are the state-of-the-art in the field of machine translation but they are data hungry techniques.
- **Extending the parallel corpus:** We proposed in this work a parallel corpus consisting of 600 sentences. This corpus can be extended by adding more sentences that will help in using other machine translation techniques that need more data such as statistical machine translation and neural machine translation.
- **Extending ArSL with facial expressions data:** The developed databases in this work do not have annotation of the facial expressions. We are not aware of any database dedicated for the facial expressions of ArSL in contrast to other sign languages.
- Presenting the Arabic-ArSL translation in a sequence of signs, in addition to the text-based produced in this work.

REFERENCES

- [1] W. Stokoe, “Sign language structure: An outline of the visual communication systems of the american deaf,” *Journal of deaf studies and deaf education*, vol. 10, no. 1, pp. 3–37, 2005.
- [2] B. Vauquois, “A survey of formal grammars and algorithms for recognition and transformation in mechanical translation.” in *Ifip congress (2)*, vol. 68, 1968, pp. 1114–1122.
- [3] “Stokoe notation,” <http://www.signwriting.org/forums/linguistics/ling006.html>.
Last visit: April, 2017, 2017.
- [4] T. Hanke, “Hamnosys-representing sign language data in language resources and language processing contexts,” in *LREC*, vol. 4, 2004.
- [5] O. Al-Barahamtoshy and H. Al-Barhamtoshy, “Arabic Text-to-Sign (ArTTS) model from Automatic SR system,” *Procedia Computer Science*, vol. 117, no. Supplement C, pp. 304 – 311, 2017, arabic Computational Linguistics. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S1877050917321798>

- [6] M. Tolba and A. Elons, “Recent developments in sign language recognition systems,” pp. xxxvi–xlii, 2013.
- [7] H. L. Lane and F. Grosjean, *Recent perspectives on American sign language*. Psychology Press, 2017.
- [8] K. Al-Fityani and C. Padden, “Sign language geography in the Arab world,” *Sign languages: A Cambridge survey*, pp. 433–450, 2010.
- [9] Arab League Educational Cultural and Scientific Organization, *First part of the Unified Arabic Sign language Dictionary*. League Arab States Arab League Educ. Cult. Sci. Organ, 2000.
- [10] M. Mohandes, M. Deriche, and J. Liu, “Image-based and sensor-based approaches to Arabic sign language recognition,” *IEEE Transactions on Human-Machine Systems*, vol. 44, no. 4, pp. 551–557, 2014.
- [11] A. E. Sidig, “Arabic sign language recognition,” Ph.D. dissertation, King Fahd University of Petroleum and Mineral, 2017.
- [12] W. Stokoe, “C.(1960). sign language structure,” *Studies in Linguistics: Occasional Paper*, vol. 8.
- [13] M. A. Abdel-Fattah, “Arabic sign language: a perspective,” *Journal of Deaf Studies and Deaf Education*, vol. 10, no. 2, pp. 212–221, 2005.
- [14] S. Semreen and M. Albinali, *The rules of Arab Qatari sign standardized language*. Supreme Council of Family Affairs, 2010.

- [15] N. Habash, R. Faraj, and R. Roth, “Syntactic annotation in the Columbia Arabic treebank,” in *Proceedings of MEDAR International Conference on Arabic Language Resources and Tools, Cairo, Egypt*, 2009.
- [16] A. Trujillo, *Translation engines: techniques for machine translation*. Springer Science & Business Media, 2012.
- [17] S. Morrissey, “Data-driven machine translation for sign languages,” Ph.D. dissertation, Dublin City University, 2008.
- [18] P. Koehn, *Statistical machine translation*. Cambridge University Press, 2009.
- [19] J. Chandioux, “Météo: un système opérationnel pour la traduction automatique des bulletins météorologiques destinés au grand public,” *Meta: Journal des traducteurs* *Meta:/Translators’ Journal*, vol. 21, no. 2, pp. 127–133, 1976.
- [20] D. Moussallem, A.-C. N. Ngomo, and M. Wauer, “Machine translation using semantic web technologies: A survey,” *IOS Press*, vol. 1, no. 5, pp. 1–22, 2016.
- [21] B. Zoph, D. Yuret, J. May, and K. Knight, “Transfer learning for low-resource neural machine translation,” *arXiv preprint arXiv:1604.02201*, 2016.

- [22] C. Boitet, “Pros and cons of the pivot and transfer approaches in multilingual machine translation,” *Readings in machine translation*, pp. 273–279, 1988.
- [23] B. J. Dorr, P. W. Jordan, and J. W. Benoit, “A survey of current paradigms in machine translation,” *Advances in computers*, vol. 49, pp. 1–68, 1999.
- [24] D. Jurafsky, “Speech and language processing: An introduction to natural language processing,” *Computational linguistics, and speech recognition*, 2000.
- [25] V. Aasha and A. Ganesh, “Rule based machine translation: English to Malayalam: A survey,” in *Proceedings of 3rd International Conference on Advanced Computing, Networking and Informatics*. Springer, 2016, pp. 447–454.
- [26] B. J. Dorr, E. H. Hovy, and L. S. Levin, “Machine translation: Interlingual methods,” 2004.
- [27] P. F. Brown, J. Cocke, S. A. D. Pietra, V. J. D. Pietra, F. Jelinek, J. D. Lafferty, R. L. Mercer, and P. S. Roossin, “A statistical approach to machine translation,” *Computational linguistics*, vol. 16, no. 2, pp. 79–85, 1990.
- [28] A. Lopez, “A survey of statistical machine translation,” MARYLAND UNIV COLLEGE PARK DEPT OF COMPUTER SCIENCE, Tech. Rep., 2007.
- [29] —, “Statistical machine translation,” *ACM Computing Surveys (CSUR)*, vol. 40, no. 3, p. 8, 2008.

- [30] K. Chunya, P. Haihua, and J. J. Webster, “Example-based machine translation: A new paradigm,” *Translation and information technology*, p. 57, 2002.
- [31] H. Somers, I. McLean, and D. Jones, “Experiments in multilingual example-based generation,” in *CSNLP 1994: 3rd Conference on the Cognitive Science of Natural Language Processing*, 1994.
- [32] H. Somers, “Example-based machine translation,” *Machine Translation*, vol. 14, no. 2, pp. 113–157, 1999.
- [33] P. Lambert, B. Media, K. Eberle, L. GmbH, R. Rapp, and B. Babych, “Workshop on hybrid approaches to translation: Overview and developments,” *ACL 2013*, p. 1, 2013.
- [34] I. Sutskever, O. Vinyals, and Q. V. Le, “Sequence to sequence learning with neural networks,” in *Advances in neural information processing systems*, 2014, pp. 3104–3112.
- [35] K. Cho, B. Van Merriënboer, C. Gulcehre, D. Bahdanau, F. Bougares, H. Schwenk, and Y. Bengio, “Learning phrase representations using rnn encoder-decoder for statistical machine translation,” *arXiv preprint arXiv:1406.1078*, 2014.
- [36] D. Bahdanau, K. Cho, and Y. Bengio, “Neural machine translation by jointly learning to align and translate,” *arXiv preprint arXiv:1409.0473*, 2014.

- [37] M.-T. Luong, H. Pham, and C. D. Manning, “Effective approaches to attention-based neural machine translation,” *arXiv preprint arXiv:1508.04025*, 2015.
- [38] Y. Wu, M. Schuster, Z. Chen, Q. V. Le, M. Norouzi, W. Macherey, M. Krikun, Y. Cao, Q. Gao, K. Macherey *et al.*, “Google’s neural machine translation system: Bridging the gap between human and machine translation,” *arXiv preprint arXiv:1609.08144*, 2016.
- [39] J. Crego, J. Kim, G. Klein, A. Rebollo, K. Yang, J. Senellart, E. Akhanov, P. Brunelle, A. Coquard, Y. Deng *et al.*, “Systran’s pure neural machine translation systems,” *arXiv preprint arXiv:1610.05540*, 2016.
- [40] R. Sennrich and B. Haddow, “Linguistic input features improve neural machine translation,” *arXiv preprint arXiv:1606.02892*, 2016.
- [41] O. Bojar, R. Chatterjee, C. Federmann, Y. Graham, B. Haddow, M. Huck, A. J. Yepes, P. Koehn, V. Logacheva, C. Monz *et al.*, “Findings of the 2016 conference on machine translation,” in *Proceedings of the First Conference on Machine Translation: Volume 2, Shared Task Papers*, vol. 2, 2016, pp. 131–198.
- [42] F. Weichert, D. Bachmann, B. Rudak, and D. Fisseler, “Analysis of the accuracy and robustness of the Leap Motion Controller,” *Sensors (Switzerland)*, vol. 13, no. 5, pp. 6380–6393, 2013.

- [43] K. Wan, N. H. B. Adnan, A. Shahriman, S. K. Zaba, M. A. A. Aziz, and Z. M. Yusof, "Gesture recognition based on hand postures and trajectories by using Dataglove: A Fuzzy Probability approach—A Review," 2012.
- [44] A. V. Nair and V. Bindu, "A Review on Indian Sign Language Recognition," *International Journal of Computer Applications*, vol. 73, no. 22, pp. 33–38, 2013.
- [45] T. Ritchings, A. Khadragi, and M. Saeb, "An Intelligent Computer-Based System for Sign Language Tutoring," *Assistive Technology*, vol. 24, no. 4, pp. 299–308, Dec. 2012. [Online]. Available: <http://www.tandfonline.com/doi/abs/10.1080/10400435.2012.680662>
- [46] M. Mohandes and M. Deriche, "Arabic sign language recognition by decisions fusion using Dempster-Shafer theory of evidence," *2013 Computing, Communications and IT Applications Conference (ComComAp)*, pp. 90–94, Apr. 2013. [Online]. Available: <http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6533615>
- [47] M. Mohandes, S. Quadri, and M. Deriche, "Arabic Sign Language Recognition an Image-Based Approach," *21st International Conference on Advanced Information Networking and Applications Workshops (AINAW'07)*, pp. 272–276, 2007. [Online]. Available: <http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=4221072>

- [48] T. Shanableh, K. Assaleh, and M. Al-Rousan, "Spatio-temporal feature-extraction techniques for isolated gesture recognition in Arabic sign language." *IEEE transactions on systems, man, and cybernetics. Part B, Cybernetics : a publication of the IEEE Systems, Man, and Cybernetics Society*, vol. 37, no. 3, pp. 641–50, Jun. 2007. [Online]. Available: <http://www.ncbi.nlm.nih.gov/pubmed/17550118>
- [49] M. AL-Rousan, K. Assaleh, and a. Talaa, "Video-based signer-independent Arabic sign language recognition using hidden Markov models," *Applied Soft Computing*, vol. 9, no. 3, pp. 990–999, Jun. 2009. [Online]. Available: <http://linkinghub.elsevier.com/retrieve/pii/S1568494609000209>
- [50] A. Ahmed and S. Aly, "Appearance-based Arabic sign language recognition using hidden markov models," in *Engineering and Technology (ICET), 2014 International Conference on*, April 2014, pp. 1–6.
- [51] S. Aly and S. Mohammed, "Arabic sign language recognition using Spatio-Temporal Local Binary Patterns and Support Vector Machine," in *Advanced Machine Learning Technologies and Applications*, ser. Communications in Computer and Information Science, A. Hassanien, M. Tolba, and A. Taher Azar, Eds. Springer International Publishing, 2014, vol. 488, pp. 36–45. [Online]. Available: <http://dx.doi.org/10.1007/978-3-319-13461-1-5>
- [52] A. Tharwat, T. Gaber, A. E. Hassanien, M. Shahin, and B. Refaat, "Sift-based Arabic sign language recognition system," in *Afro-european conference*

for industrial advancement. Springer, 2015, pp. 359–370.

- [53] T. Aujeszyk and M. Eid, “A gesture recognition architecture for Arabic sign language communication system,” *Multimedia Tools and Applications*, vol. 75, no. 14, pp. 8493–8511, 2016.
- [54] S. Aly, B. Osman, W. Aly, and M. Saber, “Arabic sign language finger-spelling recognition from depth and intensity images,” in *Computer Engineering Conference (ICENCO), 2016 12th International*. IEEE, 2016, pp. 99–104.
- [55] H. Cooper, E.-j. Ong, N. Pugeault, and R. Bowden, “Sign Language Recognition using Sub-Units,” *Journal of Machine Learning Research*, vol. 13, pp. 2205–2231, 2012.
- [56] M. P. Paulraj, S. Yaacob, M. S. Zanar Azalan, and R. Palaniappan, “A phoneme based sign language recognition system using 2D moment invariant interleaving feature and neural network,” *Proceedings - 2011 IEEE Student Conference on Research and Development, SCORed 2011*, pp. 111–116, 2011.
- [57] a. S. Elons, M. Abull-ela, and M. Tolba, “A proposed PCNN features quality optimization technique for pose-invariant 3D Arabic sign language recognition,” *Applied Soft Computing*, vol. 13, no. 4, pp. 1646–1660, Apr. 2013. [Online]. Available: <http://linkinghub.elsevier.com/retrieve/pii/S1568494612005200>

- [58] M. Tolba, A. Samir, and M. Abull-ela, “3D Arabic Sign Language Recognition Using Liner Combination of Multible 2D Views,” in *Informatics and Systems (INFOS), 2012 8th International Conference on.* cairo: IEEE, 2012.
- [59] A. Sutherland, G. Awad, and J. Han, “Boosted subunits: a framework for recognising sign language from videos,” *IET Image Processing*, vol. 7, no. September 2012, pp. 70–80, 2013.
[Online]. Available: <http://www.scopus.com/inward/record.url?eid=2-s2.0-84877816594&partnerID=tZOtx3y1>
- [60] G. Awad, J. Han, and A. Sutherland, “A unified system for segmentation and tracking of face and hands in sign language recognition,” *Proceedings - International Conference on Pattern Recognition*, vol. 1, pp. 239–242, 2006.
- [61] L. Pigou, S. Dieleman, P.-J. Kindermans, and B. Schrauwen, “Sign language recognition using convolutional neural networks,” in *Workshop at the European Conference on Computer Vision.* Springer, 2014, pp. 572–578.
- [62] J. Huang, W. Zhou, H. Li, and W. Li, “Sign language recognition using 3d convolutional neural networks,” in *Multimedia and Expo (ICME), 2015 IEEE International Conference on.* IEEE, 2015, pp. 1–6.
- [63] L. Pigou, A. van den Oord, S. Dieleman, M. Van Herreweghe, and J. Dambre, “Beyond temporal pooling: Recurrence and temporal convo-

- lutions for gesture recognition in video,” *International Journal of Computer Vision*, pp. 1–10, 2015.
- [64] O. Koller, H. Ney, and R. Bowden, “Deep learning of mouth shapes for sign language,” in *Proceedings of the IEEE International Conference on Computer Vision Workshops*, 2015, pp. 85–91.
- [65] N. Neverova, C. Wolf, G. W. Taylor, and F. Nebout, “Multi-scale deep learning for gesture detection and localization,” in *Workshop at the European conference on computer vision*. Springer, 2014, pp. 474–490.
- [66] S.-Z. Li, B. Yu, W. Wu, S.-Z. Su, and R.-R. Ji, “Feature learning based on sae-pca network for human gesture recognition in rgb-d images,” *Neurocomputing*, vol. 151, pp. 565–573, 2015.
- [67] S. Gattupalli, A. Ghaderi, and V. Athitsos, “Evaluation of deep learning based pose estimation for sign language recognition,” in *Proceedings of the 9th ACM International Conference on Pervasive Technologies Related to Assistive Environments*. ACM, 2016, p. 12.
- [68] N. Neverova, C. Wolf, G. Paci, G. Somavilla, G. Taylor, and F. Nebout, “A multi-scale approach to gesture detection and recognition,” in *Proceedings of the IEEE International Conference on Computer Vision Workshops*, 2013, pp. 484–491.
- [69] E. Tsironi, P. Barros, and S. Wermter, “Gesture recognition with a convolutional long short-term memory recurrent neural network,” in *Proceedings*

of the European symposium on artificial neural networks computational intelligence and machine learning (ESANN), 2016, pp. 213–218.

- [70] P. Wang, W. Li, S. Liu, Y. Zhang, Z. Gao, and P. Ogunbona, “Large-scale continuous gesture recognition using convolutional neural networks,” in *Pattern Recognition (ICPR), 2016 23rd International Conference on*. IEEE, 2016, pp. 13–18.
- [71] P. Wang, W. Li, S. Liu, Z. Gao, C. Tang, and P. Ogunbona, “Large-scale isolated gesture recognition using convolutional neural networks,” in *Pattern Recognition (ICPR), 2016 23rd International Conference on*. IEEE, 2016, pp. 7–12.
- [72] H. Bilen, B. Fernando, E. Gavves, A. Vedaldi, and S. Gould, “Dynamic image networks for action recognition,” in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, 2016, pp. 3034–3042.
- [73] J. Wu, P. Ishwar, and J. Konrad, “Two-stream cnns for gesture-based verification and identification: Learning user style,” in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*, 2016, pp. 42–50.
- [74] A. Almohimeed, M. Wald, and R. Damper, “Arabic text to Arabic sign language translation system for the deaf and hearing-impaired community,” in *Proceedings of the Second Workshop on Speech and Language Processing for*

- Assistive Technologies*. Association for Computational Linguistics, 2011, pp. 101–109.
- [75] A. A. I. Sidig, H. Luqman, and S. A. Mahmoud, “Arabic sign language recognition using optical flow-based features and HMM,” in *Recent Trends in Information and Communication Technology*. Cham: Springer International Publishing, 2018, pp. 297–305.
- [76] L. Zhao, K. Kipper, W. Schuler, C. Vogler, N. Badler, and M. Palmer, “A machine translation system from english to american sign language,” in *Conference of the Association for Machine Translation in the Americas*. Springer, 2000, pp. 54–67.
- [77] I. Marshall and É. Sáfar, “A prototype text to British sign language (BSL) translation system,” in *Proceedings of the 41st Annual Meeting on Association for Computational Linguistics-Volume 2*. Association for Computational Linguistics, 2003, pp. 113–116.
- [78] S. Morrissey and A. Way, “An example-based approach to translating sign language,” 2005.
- [79] S. Cox, M. Lincoln, J. Tryggvason, M. Nakisa, M. Wells, M. Tutt, and S. Abbott, “The development and evaluation of a speech-to-sign translation system to assist transactions,” *International Journal of Human-Computer Interaction*, vol. 16, no. 2, pp. 141–161, 2003.

- [80] T. Veale, A. Conway, and B. Collins, “The challenges of cross-modal translation: English-to-sign-language translation in the zardoz system,” *Machine Translation*, vol. 13, no. 1, pp. 81–106, 1998.
- [81] L. S. d’Armond, “Representation of american sign language for machine translation,” Ph.D. dissertation, Georgetown University, 2002.
- [82] I. Marshall and É. Sáfar, “Extraction of semantic representations from syntactic SMU link grammar linkages,” *Proceedings of Recent Advances in Natural Lanugage Processing*, pp. 154–159, 2001.
- [83] A. B. Grieve-Smith, “English to American sign language machine translation of weather reports,” in *Proceedings of the Second High Desert Student Conference in Linguistics (HDSL2)*, Albuquerque, NM, 1999, pp. 23–30.
- [84] L. Van Zijl and A. Combrink, “The south african sign language machine translation project: issues on non-manual sign generation,” in *Proceedings of the 2006 annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries*. South African Institute for Computer Scientists and Information Technologists, 2006, pp. 127–134.
- [85] R. San-Segundo, J. M. Montero, J. Macías-Guarasa, R. Córdoba, J. Ferreiros, and J. M. Pardo, “Proposing a speech to gesture translation architecture for spanish deaf people,” *Journal of Visual Languages & Computing*, vol. 19, no. 5, pp. 523–538, 2008.

- [86] M. Huenerfauth, M. Marcus, and M. Palmer, “Generating american sign language classifier predicates for english-to-asl machine translation,” Ph.D. dissertation, University of Pennsylvania, 2006.
- [87] A. Othman and M. Jemni, “Statistical sign language machine translation: from english written text to american sign language gloss,” *arXiv preprint arXiv:1112.0168*, 2011.
- [88] M. E. Bonham, “English to asl gloss machine translation,” 2015.
- [89] A. M. Almasoud and H. S. Al-Khalifa, “Semsignwriting: A proposed semantic system for Arabic text-to-signwriting translation,” *Journal of Software Engineering and Applications*, vol. 5, pp. 604–612, 2012.
- [90] S. Al-Rikabi and V. Hafner, “A humanoid robot as a translator from text to sign language,” *5th Language and Technology Conference: Human Language Technologies as a Challenge for Computer Science and Linguistics (LTC 2011)*, pp. 375–379, 2011.
- [91] E. A. A. E. E., E. M. M. R. Basuony, and E. S. M. Atawy, “Intelligent Arabic text to Arabic sign language translation for easy deaf communication,” *International Journal of Computer Applications*, vol. 92, no. 8, pp. 22–29, 2014.
- [92] M. Mohandes, “Automatic translation of Arabic text to Arabic sign language,” *AIML Journal*, vol. 6, no. 4, pp. 15–19, 2006.

- [93] S. M. Halawani, “Arabic sign language translation system on mobile devices,” *IJCSNS International Journal of Computer Science and Network Security*, vol. 8, no. 1, pp. 251–256, 2008.
- [94] H. S. Al-Khalifa, “Introducing Arabic sign language for mobile phones,” in *International Conference on Computers for Handicapped Persons*. Springer, 2010, pp. 213–220.
- [95] F. Al Ameiri, M. J. Zemerly, and M. Al Marzouqi, “M-learning and chatting using indexed Arabic sign language,” *International Journal for Infonomics (IJI)*, vol. 5, p. 10, 2012.
- [96] A. Al-Nafjan, B. Al-Arifi, and A. Al-Wabil, “Design and development of an educational Arabic sign language mobile application: Collective impact with Tawasol,” in *International Conference on Universal Access in Human-Computer Interaction*. Springer, 2015, pp. 319–326.
- [97] S. Bentele, “About the HamNoSys system,” *URL: <http://www.signwriting.org/forums/linguistics/ling007.html>*. *Last visit: April, 2017*, 2017.
- [98] N. Aouiti, M. Jemni, and S. Semreen, “Arab gloss annotation system for Arabic sign language,” in *Information & Communication Technology and Accessibility (ICTA), 2015 5th International Conference on*. IEEE, 2015, pp. 1–6.

- [99] A. Alsalman, M. Alghamdi, K. Alhuqayl, and S. Alsubai, “Romanization system for Arabic names,” in *Proceedings of The First International Symposium on Computer and Arabic Language (ISCAL-07)*, 2007, pp. 214–227.
- [100] S. K. Liddell, *Grammar, gesture, and meaning in American Sign Language*. Cambridge University Press, 2003.
- [101] M. Filhol, M. N. Hadjadj, and B. Testu, “A rule triggering system for automatic text-to-sign translation,” *Universal Access in the Information Society*, vol. 15, no. 4, pp. 487–498, 2016.
- [102] M. Mohandes and M. Deriche, “Image based Arabic sign language recognition,” in *Signal Processing and Its Applications, 2005. Proceedings of the Eighth International Symposium on*, vol. 1. IEEE, 2005, pp. 86–89.
- [103] C. Sun, T. Zhang, B.-K. Bao, C. Xu, and T. Mei, “Discriminative exemplar coding for sign language recognition with Kinect.” *IEEE transactions on cybernetics*, vol. 43, no. 5, pp. 1418–28, Oct. 2013. [Online]. Available: <http://www.ncbi.nlm.nih.gov/pubmed/23797313>
- [104] M. F. Tolba, A. Samir, and M. Aboul-Ela, “Arabic sign language continuous sentences recognition using PCNN and graph matching,” *Neural Computing and Applications*, vol. 23, no. 3-4, pp. 999–1010, Aug. 2012. [Online]. Available: <http://link.springer.com/10.1007/s00521-012-1024-0>
- [105] M. M. Zaki and S. I. Shaheen, “Sign language recognition using a combination of new vision based features,” *Pattern Recognition*

- Letters*, vol. 32, no. 4, pp. 572–577, 2011. [Online]. Available: <http://dx.doi.org/10.1016/j.patrec.2010.11.013>
- [106] A. A. Ahmed and S. Aly, “Appearance-based Arabic sign language recognition using hidden markov models,” in *Engineering and Technology (ICET), 2014 International Conference on*. IEEE, 2014, pp. 1–6.
- [107] A. A. I. Sidig, H. Luqman, and S. A. Mahmoud, *Arabic Sign Language Recognition Using Optical Flow-Based Features and HMM*. Cham: Springer International Publishing, 2018, pp. 297–305. [Online]. Available: <http://dx.doi.org/10.1007/978-3-319-59427-9-32>
- [108] M. Alfonse, A. Ali, A. S. Elons, N. L. Badr, and M. Aboul-Ela, “Arabic sign language benchmark database for different heterogeneous sensors,” in *Information & Communication Technology and Accessibility (ICTA), 2015 5th International Conference on*. IEEE, 2015, pp. 1–9.
- [109] S. M. Shohieb, H. K. Elminir, and A. Riad, “Signsworld atlas; a benchmark arabic sign language database,” *Journal of King Saud University-Computer and Information Sciences*, vol. 27, no. 1, pp. 68–76, 2015.
- [110] M. Zahedi, D. Keysers, and H. Ney, “Pronunciation clustering and modeling of variability for appearance-based sign language recognition,” in *International Gesture Workshop*. Springer, 2005, pp. 68–79.
- [111] M. Zahedi, P. Dreuw, D. Rybach, T. Deselaers, and H. Ney, “Continuous sign language recognition-approaches from speech recognition and available

- data resources,” in *Second Workshop on the Representation and Processing of Sign Languages: Lexicographic Matters and Didactic Scenarios*, 2006, pp. 21–24.
- [112] P. Dreuw, D. Rybach, T. Deselaers, M. Zahedi, and H. Ney, “Speech recognition techniques for a sign language recognition system,” *hand*, vol. 60, p. 80, 2007.
- [113] U. Von Agris and K.-F. Kraiss, “Towards a video corpus for signer-independent continuous sign language recognition,” *Gesture in Human-Computer Interaction and Simulation, Lisbon, Portugal, May*, 2007.
- [114] O. A. Crasborn, J. Mesch, D. Waters, A. Nonhebel, E. Van der Kooij, B. Woll, and B. Bergman, “Sharing sign language data online: Experiences from the echo project,” *International journal of corpus linguistics*, vol. 12, no. 4, pp. 535–562, 2007.
- [115] A. Almohimeed, M. Wald, and R. Damper, “An Arabic sign language corpus for instructional language in school,” in *LREC 2010: 4th Workshop on the Representation and Processing of Sign Languages: Corpora and Sign Language Technologies*, May 2010, pp. 81–82.
- [116] K. Assaleh, T. Shanableh, M. Fanaswala, F. Amin, and H. Bajaj, “Continuous Arabic sign language recognition in user dependent mode,” *Journal of Intelligent learning systems and applications*, vol. 2, no. 01, pp. 19–27, 2010.

- [117] Y. O. M. Elhadj, Z. Zemirli, and K. Ayyadi, “Development of a bilingual parallel corpus of Arabic and Saudi sign language: Part I,” in *Intelligent Informatics*. Springer, 2013, pp. 285–295.
- [118] P. Dreuw, J. Forster, T. Deselaers, and H. Ney, “Efficient approximations to model-based joint tracking and recognition of continuous sign language,” in *Automatic Face & Gesture Recognition, 2008. FG’08. 8th IEEE International Conference on*. IEEE, 2008, pp. 1–6.
- [119] P. Dreuw, C. Neidle, V. Athitsos, S. Sclaroff, and H. Ney, “Benchmark databases for video-based automatic sign language recognition.” in *Proceedings of the Sixth International Conference on Language Resources and Evaluation (LREC’08)*, 2008.
- [120] C. Neidle and C. Vogler, “A new web interface to facilitate access to corpora: Development of the ASLLRP data access interface (DAI),” in *Proc. 5th Workshop on the Representation and Processing of Sign Languages: Interactions between Corpus and Lexicon, LREC*, 2012.
- [121] V. Athitsos, C. Neidle, S. Sclaroff, J. Nash, A. Stefan, A. Thangali, H. Wang, and Q. Yuan, “Large lexicon project: American sign language video corpus and sign language indexing/retrieval algorithms,” in *Workshop on the Representation and Processing of Sign Languages: Corpora and Sign Language Technologies (CSLT)*, 2010, pp. 11–14.

- [122] A. Schembri, J. Fenlon, R. Rentelis, and K. Cormier, “British sign language corpus project: A corpus of digital video data of British sign language 2008-2010 .” 2011.
- [123] O. A. Crasborn and I. Zwitterlood, “The corpus NGT: an online corpus for professionals and laymen,” in *3rd Workshop on the Representation and Processing of Sign Languages (LREC)*. ELDA, 2008, pp. 44–49.
- [124] L. Leeson, J. Saeed, D. Byrne-Dunne, A. Macduff, and C. Leonard, “Moving heads and moving hands: Developing a digital corpus of Irish sign language. The ‘signs of Ireland’ corpus development project,” in *IT&T conference, Carlow*, 2006.
- [125] Y.-H. Chiu, C.-H. Wu, H.-Y. Su, and C.-J. Cheng, “Joint optimization of word alignment and epenthesis generation for Chinese to Taiwanese sign synthesis,” *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 29, no. 1, pp. 28–39, 2007.
- [126] J. Bungeroth, D. Stein, P. Dreuw, M. Zahedi, and H. Ney, “A German sign language corpus of the domain weather report,” in *Fifth International Conference on Language Resources and Evaluation*, 2006, pp. 2000–2003.
- [127] N. Habash, A. Soudi, and T. Buckwalter, “On Arabic transliteration,” in *Arabic computational morphology*. Springer, 2007, pp. 15–22.
- [128] A. Pasha, M. Al-Badrashiny, M. T. Diab, A. El Kholy, R. Eskander, N. Habash, M. Pooleery, O. Rambow, and R. Roth, “MADAMIRA: A fast,

- comprehensive tool for morphological analysis and disambiguation of Arabic.” in *LREC*, vol. 14, 2014, pp. 1094–1101.
- [129] K. Heafield, “KenLM: Faster and smaller language model queries,” in *Proceedings of the Sixth Workshop on Statistical Machine Translation*. Association for Computational Linguistics, 2011, pp. 187–197.
- [130] M. Attia, P. Pecina, L. Tounsi, A. Toral, and J. Van Genabith, “Lexical profiling for Arabic,” *Proceedings of eLex*, pp. 23–33, 2011.
- [131] K. Elghamry, “A lexical-syntactic solution to the problem of broken plural in Arabic,” in *Arabic Natural Language Processing Track*, G. U. R. T. G. 2010), Ed., Washington, USA, mar 2010.
- [132] E. B. Yaqoub, *The detailed dictionary in the plurals. (In Arabic)*. Scientific Book House, 2004.
- [133] A. Chennoufi and A. Mazroui, “Morphological, syntactic and diacritics rules for automatic diacritization of Arabic sentences,” *Journal of King Saud University-Computer and Information Sciences*, vol. 29, no. 2, pp. 156–163, 2017.
- [134] “Almaany dictionary,” *URL: <http://www.almaany.com>*. *Last visit: August, 2017*, 2017.
- [135] A. Stolcke, “SRILM-an extensible language modeling toolkit.” in *Proceedings International Conference on Spoken Language Processing*, 2002, pp. 257–286.

- [136] M. Federico, N. Bertoldi, and M. Cettolo, “IRSTLM: an open source toolkit for handling large scale language models.” in *Interspeech*, 2008, pp. 1618–1621.
- [137] M. Gonàlez, J. Giménez, and L. Màrquez, “A Graphical Interface for MT Evaluation and Error Analysis,” in *The 50th Annual Meeting of the Association for Computational Linguistics*, 2012.
- [138] K. Papineni, S. Roukos, T. Ward, and W.-J. Zhu, “BLEU: a method for automatic evaluation of machine translation,” in *Proceedings of the 40th annual meeting on association for computational linguistics*. Association for Computational Linguistics, 2002, pp. 311–318.
- [139] S. Nießen, F. J. Och, G. Leusch, H. Ney, and L. F. Informatik, “An evaluation tool for machine translation: Fast evaluation for MT research.” in *In Proceedings of the 2nd International Conference on Language Resources and Evaluation (LREC-2000)*, 2000.
- [140] M. Snover, B. Dorr, R. Schwartz, L. Micciulla, and J. Makhoul, “A study of translation edit rate with targeted human annotation,” in *Proceedings of association for machine translation in the Americas*, vol. 200, no. 6, 2006.
- [141] N. Y. Habash, “Introduction to Arabic natural language processing,” *Synthesis Lectures on Human Language Technologies*, vol. 3, no. 1, pp. 1–187, 2010.

- [142] A. Shahrour, S. Khalifa, D. Taji, and N. Habash, “Camelparser: A system for Arabic syntactic analysis and morphological disambiguation,” in *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: System Demonstrations*, 2016, pp. 228–232.
- [143] J. Nivre, J. Hall, J. Nilsson, A. Chanev, G. Eryigit, S. Kübler, S. Marinov, and E. Marsi, “Maltparser: A language-independent system for data-driven dependency parsing,” *Natural Language Engineering*, vol. 13, no. 02, pp. 95–135, 2007.
- [144] S. Elkateb, W. Black, H. Rodríguez, M. Alkhalifa, P. Vossen, A. Pease, and C. Fellbaum, “Building a wordnet for Arabic,” in *Proceedings of The fifth international conference on Language Resources and Evaluation (LREC 2006)*, 2006.
- [145] M. Al-Jefri, “Real-word error detection and correction in Arabic text,” Master’s thesis, King Fahd University of Petroleum and Minerals, 2013.
- [146] “Arabic sign language dictionary,” <http://www.menasy.com/>. *Last visit: April, 2017*, 2017.
- [147] Y. Marton, N. Habash, and O. Rambow, “Dependency parsing of Modern Standard Arabic with lexical and inflectional features,” *Computational Linguistics*, vol. 39, no. 1, pp. 161–194, 2013.

- [148] L. S. Hadla, T. M. Hailat, and M. N. Al-Kabi, “Evaluating Arabic to English machine translation,” *International Journal of Advanced Computer Science and Applications (IJACSA)*, vol. 5, no. 11, pp. 68–73, 2014.

APPENDIX A

KARSL BILINGUAL PARALLEL CORPUS

Table A.1: KArSL bilingual parallel corpus

SNO-Cat	Arabic sentence
	ArSL translation 01
	ArSL translation 02
1-Tr	<p>يتم تطعيم الأطفال بعد سن الثانية ytm tTEym Al>TfAl bEd sn AlvAnyp [تطعيم] [طفل] [كثير] [عمر] [اثنان] [سنة] [بعد] [tTEym] [Tfl] [kvyr] [Emr] [AvnAn] [snp] [bEd] [طفل] [في] [تطعيم] [بعد] [عمر] [سنة] [اثنان] [Tfl] [fy] [tTEym] [bEd] [Emr] [snp] [AvnAn]</p>
2-Tr	<p>استخدام الغازات في الحروب يسبب السرطان AstxdAm AlgAzAt fy AlHrbw ysbbs AlsrTAn [استخدام] [غاز] [كثير] [اثناء] [الحرب] [سبب] [مرض السرطان] [AstxdAm] [gAz] [kvyr] [AvnA'] [AlHrb] [sbb] [mrD AlsrTAn] [غاز] [حرب] [سبب] [مرض السرطان] [gAz] [Hrb] [sbb] [mrD AlsrTAn]</p>
3-Tr	<p>قال الطبيب أن معي بكتيريا في الجلد qAl AlTbyb >n mEy bktyryA fy Aljld [قبل] [الطبيب] [فكلام] [انا] [موجود] [بكتيريا] [في] [الجلد] [qbl] [AlTbyb] f-[klAm] [AnA] [mwjwd] [bktyryA] [fy] [Aljld] [قبل] [طبيب] [فكلام] [انا] [في] [بكتيريا] [في] [الجلد] [qbl] [Tbyb] f-[klAm] [AnA] [fy] [bktryA] [fy] [Aljld]</p>
4-Tr	<p>عانى المريض من تورم في الساقين EAnY AlmryD mn twrm fy AlsAqyn [قبل] [المريض] [مشكلة] [ورم] [في] [اثنان] [الساق]</p>

	<p>[qbl] [AlmryD] [m\$klp] [wrm] [fy] [AvnAn] [AlsAq] [قبل] [مريض] [في] [مشكلة] [ورم] [اثنان] [الساق] [qbl] [mryD] [fy] [m\$klp] [wrm] [AvnAn] [AlsAq]</p>
5-Tr	<p>متى لاحظت وجود هذا الورم mtY lAHZt wjwd h*A Alwrm [?] [انت] [فرؤية] [هذا] [الم] [اول] [مرة] [متى] [?] [Ant] f-[r&yp] [h*A] [Alm] [Awl] [mrp] [mtY] [متى] [فرؤية] [هذا] [اول] [مرة] [?] [mtY] f-[r&yp] [h*A] [Awl] [mrp] [?]</p>
6-Tr	<p>هل يمكن أن ألد ولادة طبيعية وأنا حامل بتوأم؟ hl ymkn >n >ld wIAdp TbyEyp wAnA HAml btw>m? [?] [ممكن] [انا] [ولادة] [طبيعية] [كيف] [انا] [ف] [تأمل] [توأم] [?] [mmkn] [AnA] [wIAdp] [TbyEyp] [kyf] [AnA] f-[HAml] [t&Am] [ممكن] [ولادة] [طبيعي] [كيف] [??] [انا] [في] [ف] [تأمل] [توأم] [mmkn] [wIAdp] [TbyEy] [kyf] [??] [AnA] [fy] f-[HAml] [tw>m]</p>
7-Tr	<p>ينصح الأطباء بالتقليل من الدهون في الأكل ynSH Al>TbA' bAltqlyl mn Aldhwn fy Al>kl [طيب] [ف] [قال] [الدهن] [في] [الاكل] [لازم] [نقص] [Tyb] f-[qAl] [Aldhn] [fy] [AlAkl] [lAzm] [nqS] [طبيب] [دائما] [دائما] [ف] [لازم] [دهن] [قليل] [في] [الاكل] [Tbyb] [dA}mA] [dA}mA] f-[Amr] [lAzm] [dhn] [qlyl] [fy] [AlAkl]</p>
8-Tr	<p>كيف يمكن تجنب الإمساك؟ kyf ymkn tjn b Al<msAk? [?] [امساك] [وقف] [كيف] [?] [AmsAk] [wqf] [kyf] [كيف] [امساك] [وقف] [kyf] [AmsAk] [wqf]</p>
9-Tr	<p>لا تستعمل المشروبات الساخنة أثناء فترة الإسهال lA tstEml Alm\$rbwAt AlsAxnp >vnA' ftrp Al<shAl [وقت] [اسهال] [انت] [ف] [شرب] [لا] [شراب] [ساخن] [wqt] [AshAl] [Ant] f-[\$rb] [lA] [\$rAb] [sAxn] [ممنوع] [شراب] [ساخن] [وقت] [مرض] [اسهال] [mmnwE] [\$rAb] [sAxn] [wqt] [mrD] [AshAl]</p>
10-Tr	<p>يؤثر العمود الفقري على توازن الإنسان y&vr AlEmwd Alfqry ElY twAzn Al<nsAn [العمود الفقري] [ف] [تأثير] [توازن] [الإنسان] [AlEmwd Alfqry] f-[tAvyr] [twAzn] [Al<nsAn]</p>

	<p>[العمود الفقري] [مسئول] [توازن]</p> <p>[AlEmwd Alfqry] [ms}wl] [twAzn]</p>
11-Tr	<p>هل هذا الورم قديم ؟</p> <p>hl h*A Alwrm qdym?</p> <p>[؟] [هذا] [ورم] [قديم] [هل]</p> <p>[?] [h*A] [wrm] [qdym] [hl]</p> <p>[هذا] [في] [زمان]</p> <p>[h*A] [fy] [zmAn]</p>
12-Tr	<p>كم سعر جهاز قياس الضغط ؟</p> <p>km sEr jhAz qyAs AlDgT?</p> <p>[؟] [سعر] [جهاز قياس الضغط] [كم]</p> <p>[?] [sEr] [jhAz qyAs AlDgT] [km]</p> <p>[كم] [سعر] [جهاز قياس الضغط] [؟]</p> <p>[km] [sEr] [jhAz qyAs AlDgT] [?]</p>
13-Tr	<p>يوجد قسم لعلاج الإدمان في المستشفى</p> <p>ywjd qsm lElAj Al<dmAn fy Almst\$fY</p> <p>[قسم] [علاج] [الإدمان] [موجود] [في] [المستشفى]</p> <p>[qsm] [ElAj] [Al<dmAn] [mwjwd] [fy] [Almst\$fY]</p> <p>[موجود] [في] [المستشفى] [قسم] [خاص] [علاج] [الإدمان]</p> <p>[mwjwd] [fy] [Almst\$fY] [qsm] [xAS] [ElAj] [Al<dmAn]</p>
14-Tr	<p>المغص من الأعراض الأولى للولادة</p> <p>AlmgS mn Al>ErAD Al>wlY llwlAdp</p> <p>[مغص] [علامة] [بدائية] [ولادة]</p> <p>[mgS] [ElAmp] [bdA}yp] [wlAdp]</p> <p>[هذا] [مغص] [بداية] [ولادة]</p> <p>[h*A] [mgS] [bdAyp] [wlAdp]</p>
15-Tr	<p>يقوم طبيب العظام بإجراء عملية جراحية</p> <p>yqwm Tbyb AlEZAm b<jrA' Emlyp jrAHyp</p> <p>[الان] [طبيب] [العظم] [فعمل] [عملية] [جراحية]</p> <p>[AlAn] [Tbyb] [AlEZm] f-[Eml] [Emlyp] [jrAHyp]</p> <p>[طبيب] [عظم] [فعمل] [عملية]</p> <p>[Tbyb] [EZm] f-[Eml] [Emlyp]</p>
16-Tr	<p>هل تعاني من مغص ؟</p> <p>hl tEAny mn mgS?</p> <p>[؟] [انت] [في] [الم] [مغص] [هل]</p> <p>[?] [Ant] [fy] [Alm] [mgS] [hl]</p> <p>[؟] [في] [مغص]</p>

	[?] [fy] [mgS]
17-Tr	<p>طلب طبيب القلب تجهيز غرفة العمليات</p> <p>Tlb Tbyb Alqlb tjhyz grfp AlEmlyAt</p> <p>[طبيب] [القلب] [فـ]كلام] [جهاز] [غرفة] [العملية]</p> <p>[Tbyb] [Alqlb] f-[klAm] [jhz] [grfp] [AlEmlyp]</p> <p>[طبيب] [قلب] [أمر] [عمليات] [غرفة] [جاهز]</p> <p>[Tbyb] [qlb] [Amr] [EmlyAt] [grfp] [jAhz]</p>
18-Tr	<p>عليك البدء بحمية خاصة بسكري الحمل</p> <p>Elyk Albd' bHmyp xASp bskry AlHml</p> <p>[لازم] [أنت] [فـ]بداية] [حمية] [سكر] [حمل]</p> <p>[lAzm] [Ant] f-[bdAyp] [Hmyp] [skr] [Hml]</p> <p>[لازم] [بداية] [حمية] [سكر] [حمل]</p> <p>[lAzm] [bdAyp] [Hmyp] [skr] [Hml]</p>
19-Tr	<p>أعاني من التهاب في المعدة</p> <p>>EAny mn AlthAb fy AlmEdp</p> <p>[أنا] [فـ]الم] [في] [المعدة]</p> <p>[AnA] f-[Alm] [fy] [AlmEdp]</p> <p>[أنا] [في] [التهاب] [المعدة]</p> <p>[AnA] [fy] [AlthAb] [AlmEdp]</p>
20-Tr	<p>قد تحتاج إلى نقل دم أثناء العملية</p> <p>qd tHtAj <IY nql dm >vnA' AlEmlyp</p> <p>[ممكن] [أنت] [حاجة] [نقل] [دم] [أثناء] [العملية]</p> <p>[mmkn] [Ant] [HAjp] [nql] [dm] [AvnA'] [AlEmlyp]</p> <p>[ممكن] [لازم] [دم] [وقت] [العملية]</p> <p>[mmkn] [lAzm] [dm] [wqt] [AlEmlyp]</p>
21-Tr	<p>استخدام الكبسولة ثلاث مرات في اليوم</p> <p>AstxdAm Alkbswlp vlAv mrAt fy Alywm</p> <p>[أنت] [استخدم] [الكبسولة] [ثلاثة] [في] [اليوم]</p> <p>[>nt] [Astxdm] [Alkbswlp] [vlAvp] [fy] [Alywm]</p> <p>[لازم] [أخذ] [كبسولة] [ثلاثة] [مرة] [يوم]</p> <p>[lAzm] [Ax*] [kbswlp] [vlAvp] [mrp] [ywm]</p>
22-Tr	<p>أخذت ابني إلى طبيب الأطفال أمس</p> <p>>x*t Abny <IY Tbyb Al>TfAl >ms</p> <p>[أمس] [أنا] [مع] [أبن] [فـ]ذهاب] [طبيب] [الطفل]</p> <p>[Ams] [AnA] [mE] [Abn] f-[*hAb] [Tbyb] [AlTfl]</p> <p>[أمس] [فـ]ذهاب] [مع] [أنا] [أبن] [عند] [طبيب] [طفل]</p> <p>[Ams] f-[*hAb] [mE] [AnA] [Abn] [End] [Tbyb] [Tfl]</p>

23-Tr	<p>قد يتسبب التأخر في إجراء العملية الجراحية في شلل</p> <p>qd ytsbb Alt>xr fy <jrA' AlEmlyp AljrAHyp fy \$ll</p> <p>[الشلل] [ممكن] [السبب] [تأخير] [عملية جراحية]</p> <p>[Al\$ll] [mmkn] [Alsbb] [tAxyr] [Emlyp jrAHyp]</p> <p>[عملية جراحية] [تأخير] [لاحقا] [شلل]</p> <p>[Emlyp jrAHyp] [t>xyr] [lAHqA] [\$ll]</p>
24-Tr	<p>ما سبب ولادتك القيصرية السابقة؟</p> <p>mA sbb wlAdtk AlqySryp AlsAbqp?</p> <p>[؟] [انت] [عملية] [قيصرية] [السبب] [ماذا]</p> <p>[?] [Ant] [Emlyp] [qySryp] [Alsbb] [mA*A]</p> <p>[سبب] [اول] [عملية] [قيصرية]</p> <p>[sbb] [Awl] [Emlyp] [qySryp]</p>
25-Tr	<p>يرتبط الإحساس بالجهاز العصبي</p> <p>yrtbT Al<HsAs bAljhAz AlESby</p> <p>[الإحساس] [فارتباط] [مع] [الجهاز العصبي]</p> <p>[Al<HsAs] f-[ArtbAT] [mE] [AljhAz AlESby]</p> <p>[الإحساس] [علاقة] [الجهاز العصبي]</p> <p>[Al<HsAs] [ElAqp] [AljhAz AlESby]</p>
26-Tr	<p>خذ الأدوية للتخفيف من الزكام</p> <p>x* Al>dwyp lltxfyf mn AlzkAm</p> <p>[انت] [خذ] [العلاج] [كثير] [السبب] [الزكام] [وقف]</p> <p>[Ant] [x*] [AlElAj] [kvyr] [Alsbb] [AlzkAm] [wqf]</p> <p>[هذا] [دواء] [زكام] [وقف]</p> <p>[h*A] [dwA'] [zkAm] [wqf]</p>
27-Tr	<p>على الأم المرضعة الاهتمام بالتغذية</p> <p>ElY Al>m AlmrDEp AlAhtmAm bAltg*yp</p> <p>[لازم] [ام] [رضاعه] [اكل] [مهم]</p> <p>[lAzm] [Am] [rDAEh] [Akl] [mhm]</p> <p>[لازم] [ام] [رضاعة] [طفل] [اكل] [مهم]</p> <p>[lAzm] [Am] [rDAEp] [Tfl] [Akl] [mhm]</p>
28-Tr	<p>تاخذ الممرضة وزن الطفل بعد الولادة</p> <p>tAx* AlmmrDp wzn AlTfl bEd AlwlAdp</p> <p>[الولادة] [بعد] [الممرضة] [وزن] [الطفل]</p> <p>[AlwlAdp] [bEd] [AlmmrDp] [wzn] [AlTfl]</p> <p>[ممرضة] [وزن] [طفل]</p> <p>[mmrDp] [wzn] [Tfl]</p>

29-Tr	<p>أكثر من تناول الفاكهة والخضار >kvr mn tnAwl AlfAkhp wAlxDAr [لازم] [انت] [اكل] [كثير] [فواكة] [خضار] [lAzm] [Ant] [Akl] [kvyr] [fwAkp] [xDAr] [لازم] [اكل] [فاكهة] [خضار] [مختلف] [lAzm] [Akl] [fAkhp] [xDAr] [mxtlf]</p>
30-Tr	<p>سبب الأزمة القلبية هو انسداد شرايين القلب sbb Al>zmp Alqlbyp hw AnsdAd \$rAyyyn Alqlb [أزمة القلبية] [السبب] [شرايين القلب] [غلق] [>zmp Alqlbyp] [Alsbb] [\$rAyyyn Alqlb] [glq] [أزمة قلبية] [السبب] [فمسدود] [شرايين القلب] [Azmp qlbyp] [Alsbb] f-[msdwd] [\$rAyyyn Alqlb]</p>
31-Tr	<p>لا يوجد دواء للزكام lA ywjd dwA' llzkAm [الزكام] [علاج] [يوجد] [لا] [AlzkAm] [ElAj] [ywjd] [lA] [يوجد] [لا] [دواء] [زكام] [ywjd] [lA] [dwA'] [zkAm]</p>
32-Tr	<p>يوجد طبيب أطفال في كل مستشفى ywjd Tbyb >TfAl fy kl mst\$fY [طبيب] [طفل] [موجود] [كل] [مستشفى] [Tbyb] [Tfl] [mwjwd] [kl] [mst\$fY] [في] [طبيب] [طفل] [كل] [مستشفى] [fy] [Tbyb] [Tfl] [kl] [mst\$fY]</p>
33-Tr	<p>استخدم قطرة العين لعلاج التهاب Astxdm qTrp AlEyn lElAj AlAlthAb [انت] [ف] [استخدام] [قطرة] [العين] [السبب] [علاج] [التهاب] [Ant] f-[AstxdAm] [qTrp] [AlEyn] [Alsbb] [ElAj] [AlAlthAb] [التهاب] [العين] [لازم] [قطرة] [AlthAb] [AlEyn] [lAzm] [qTrp]</p>
34-Tr	<p>يجب زيارة الطبيب بشكل دائم yjb zyArp AlTbyb b\$kl dA}m [لازم] [ف] [ذهاب] [الطبيب] [دائماً] [lAzm] f-[*hAb] [AlTbyb] [dA}mA] [لازم] [مستمر] [رؤية] [دكتور] [lAzm] [mstmr] [r&yp] [dktwr]</p>
35-Tr	<p>يترافق علاج السرطان مع تساقط الشعر</p>

	<p>ytrAfq ElAj AlsrTAn mE tsAqT Al\$Er</p> <p>[علاج] [السرطان] [فـ[علاقة] [تساقط الشعر]</p> <p>[ElAj] [AlsrTAn] f-[ElAqp] [tsAqT Al\$Er]</p> <p>[علاج] [السرطان] [في] [تساقط الشعر]</p> <p>[ElAj] [AlsrTAn] [fy] [tsAqT Al\$Er]</p>
36-Tr	<p>فترة علاج الجهاز العصبي طويلة</p> <p>ftpr ElAj AljhAz AlESby Twylp</p> <p>[وقت] [علاج] [الجهاز العصبي] [طويل]</p> <p>[wqt] [ElAj] [AljhAz AlESby] [Twyl]</p> <p>[علاج] [الجهاز العصبي] [ممكـن] [وقت] [طويل]</p> <p>[ElAj] [AljhAz AlESby] [mmkn] [wqt] [Twyl]</p>
37-Tr	<p>قم بزيارة الطبيب عند الشعور بالألم</p> <p>qm bzyArp AlTbyb End Al\$Ewr bAl>lm</p> <p>[انت] [في] [الم] [لازم] [ذهاب] [الطبيب]</p> <p>[Ant] [fy] [Alm] [lAzm] [*hAb] [AlTbyb]</p> <p>[مثلا] [في] [الم] [لازم] [ذهاب] [دكتور]</p> <p>[mvIA] [fy] [>lm] [lAzm] [*hAb] [dktwr]</p>
38-Tr	<p>هذا الكتاب يحتوي على كيفية عمل الإسعافات الأولية في المنزل</p> <p>h*A AlktAb yHtwy ElY kyfyp Eml Al<sEAfAt Al>wlyp fy Almnzl</p> <p>[هذا] [الكتاب] [فهم] [إسعافات أولية] [داخل] [البيت]</p> <p>[h*A] [AlktAb] [fhm] [AsEAfAt Awlyp] [dAxl] [Albyt]</p> <p>[هذا] [كتاب] [كيف] [إسعافات أولية] [في] [البيت]</p> <p>[h*A] [ktAb] [kyf] [AsEAfAt Awlyp] [fy] [Albyt]</p>
39-Tr	<p>يقوم المختبر بإجراء تحليل الدم</p> <p>yqwm Almxtbr b<jrA' tHlyl Aldm</p> <p>[المختبر] [عمل] [تحليل الدم]</p> <p>[Almxtbr] [Eml] [tHlyl Aldm]</p> <p>[الان] [المختبر] [عمل] [تحليل الدم]</p> <p>[AlAn] [Almxtbr] [Eml] [tHlyl Aldm]</p>
40-Tr	<p>تشتد أعراض المرض في الصباح</p> <p>t\$td >ErAD AlmrD fy AlSbAH</p> <p>[المرض] [قوي] [وقت] [الصباح]</p> <p>[AlmrD] [qwy] [wqt] [AlSbAH]</p> <p>[مرض] [قوي] [وقت] [صباح]</p> <p>[mrD] [qwy] [wqt] [SbAH]</p>
41-Tr	<p>تعال اقيس لك الضغط</p> <p>tEAl Aqys lk AlDgT</p>

	<p>[انت] [تعال] [انا] [عمل] [انت] [قياس الضغط] [Ant] [tEAl] [AnA] [Eml] [Ant] [qyAs AlDgT] [تعال] [قياس ضغط] [tEAl] [qyAs DgT]</p>
42-Tr	<p>طبيب الأطفال يفهم الأطفال بسرعة Tbyb Al>TfAl yfhm Al>TfAl bsrEp [طبيب] [طفل] [فهم] [طفل] [سريع] [Tbyb] [Tfl] [fhm] [Tfl] [sryE] [طبيب] [طفل] [فاهم] [طفل] [كيف] [سريع] [Tbyb] [Tfl] [fAhm] [Tfl] [kyf] [sryE]</p>
43-Tr	<p>أشتكي من الأرق >\$tky mn Al>rq [انا] [مشكلة] [سهر] [AnA] [m\$klp] [shr] [انا] [نوم] [يوجد] [لا] [AnA] [nwm] [ywjdl] [lA]</p>
44-Tr	<p>هل تعمل كل حواسك الخمس؟ hl tEml kl HwAsk Alxms? [؟] [أنت] [كل] [حواس خمس] [عمل] [هل] [?] [>nt] [kl] [HwAs xms] [Eml] [hl] [انت] [حواس خمس] [كامل] [شغل] [تمام] [؟] [Ant] [HwAs xms] [kAml] [\$gl] [tmAm] [?]</p>
45-Tr	<p>هل هذه الزيارة الأولى لك؟ hl h*h AlzyArp Al>wlY lk? [؟] [أنت] [وصول] [هنا] [قبل] [?] [Ant] [wSwl] [hnA] [qbl] [؟] [أول] [مرة] [هنا] [?] [Awl] [mrp] [hnA]</p>
46-Tr	<p>أنتِ حامل بتوأم >nti HAml btw>m [انت] [حامل] [توأم] [Ant] [HAml] [t&Am] [انت] [في] [حامل] [توأم] [Ant] [fy] [HAml] [tw>m]</p>
47-Tr	<p>هل يعاني أحد أفراد أسرتك من التورم؟ hl yEAny >Hd >frAd >srtk mn Altworm? [؟] [انت] [في] [شخص] [في] [الاسرة] [مريض] [ورم] [هل]</p>

	<p>[?] [Ant] [fy] [\$xS] [fy] [AlAsrp] [mryD] [wrm] [hl] [انت] [في] [أسرة] [مريض] [تورم] [؟] [Ant] [fy] [Asrp] [mryD] [twrm] [?]</p>
48-Tr	<p>الأمعاء الدقيقة أطول من الأمعاء الغليظة Al>mEA' Aldqyqp >Twl mn Al>mEA' AlglyZp [الأمعاء الدقيقة] [طويل] [من] [الأمعاء الغليظة] [Al>mEA' Aldqyqp] [Twyl] [mn] [Al>mEA' AlglyZp] [الأمعاء الدقيقة] [طويل] [من] [الأمعاء الغليظة] [Al>mEA' Aldqyqp] [Twyl] [mn] [Al>mEA' AlglyZp]</p>
49-Tr	<p>تعاني معظم الحوامل من الغثيان في الصباح tEAny mEZm AlHwAml mn AlgvyAn fy AlSbAH [كثير] [حامل] [شعور] [غثيان] [وقت] [الصباح] [kvyr] [HAml] [\$Ewr] [gvyAn] [wqt] [AlSbAH] [حامل] [دائماً] [في] [غثيان] [الصباح] [HAml] [dA}mA] [fy] [gtyAn] [AlSbAH]</p>
50-Tr	<p>قد يتسبب الإمساك الدائم في البواسير qd ytsbb Al<msAk AldA}m fy AlbWAsyr [ممكّن] [مرض] [البواسير] [السبب] [إمساك] [مستمر] [mmkn] [mrD] [AlbwAsyr] [Alsbb] [AmsAk] [mstmr] [إمساك] [مستمر] [لاحقاً] [في] [بواسير] [AmsAk] [mstmr] [lAHqA] [fy] [bwAsyr]</p>
51-Tr	<p>اسمك لو سمحت؟ Asmk lw smHt? [؟] [انت] [اسم] [ماذا] [?] [Ant] [Asm] [mA*A] [؟] [انت] [اسم] [ماذا] [?] [Ant] [Asm] [mA*A]</p>
52-Tr	<p>قد يتورم فخذ الرضيع بعد التطعيم qd ytwrm fx* AlrDyE bEd AltTEym [التطعيم] [بعد] [ممكّن] [فخذ] [الرضيع] [ورم] [AltTEym] [bEd] [mmkn] [fx*] [AlrDyE] [wrm] [ممكّن] [هنا] [ورم] [بعد] [تطعيم] [mmkn] [hnA] [wrm] [bEd] [tTEym]</p>
53-Tr	<p>كم عمرك؟ km Emrk? [؟] [انت] [عمر] [كم] [?] [Ant] [Emr] [km]</p>

	<p>[عمر] [كم] [Emr] [km]</p>
54-Tr	<p>يرافق الحمل ألم في العظام yrAfq AlHml >lm fy AlEZAm [حمل] [موجود] [ممكن] [الم] [عظم] [موجود] [Hml] [mwjwd] [mmkn] [Alm] [EZm] [mwjwd] [أحيانا] [سبب] [حمل] [في] [الم] [عظم] [AHyAnA] [sbb] [Hml] [fy] [Alm] [EZm]</p>
55-Tr	<p>حرقان المعدة منتشرة عند كبار السن HrqAn AlmEdp mnt\$rp End kbAr Alsn [الحرقان] [فانتشار] [شخص] [ثلاثة] [عمر] [كبير] [AlHrqAn] f-[Ant\$Ar] [\$xS] [vlAvp] [Emr] [kbyr] [حرقة] [معدة] [كثير] [في] [عند] [العجوز] [Hrqp] [mEdp] [kvyr] [fy] [End] [AlEjwz]</p>
56-Tr	<p>الإسهال أحد أعراض التهاب الأمعاء الدقيقة Al<shAl >Hd >ErAD AlthAb Al>mEA' Aldqyqp [الإسهال] [سبب] [التهاب] [الأمعاء الدقيقة] [Al<shAl] [sbb] [AlthAb] [Al>mEA' Aldqyqp] [إسهال] [السبب] [أمعاء دقيقة] [في] [التهاب] [AshAl] [Alsbb] [AmEA' dqyqp] [fy] [AlthAb]</p>
57-Tr	<p>تساقط شعري أمس أثناء الاستحمام tsAqT \$Ery >ms >vnA' AlAstHmA [أمس] [أنا] [ف] [تساقط الشعر] [أثناء] [الاستحمام] [>ms] [AnA] f-[tsAqT Al\$Er] [>vnA'] [AlAstHmA] [أمس] [أنا] [ف] [تساقط الشعر] [في] [الاستحمام] [Ams] [AnA] f-[tsAqT Al\$Er] [fy] [AlAstHmA]</p>
58-Tr	<p>الجلطة أكثر أسباب الشلل النصفي AljlTp >kvr >sbAb Al\$ll AlnSfy [الجلطة] [السبب] [رقم] [واحد] [الشلل النصفي] [AljlTp] [Alsbb] [rqm] [wAHd] [Al\$ll AlnSfy] [شلل نصفي] [سبب] [جلطة] [قلب] [\$ll nSfy] [sbb] [jlTp] [qlb]</p>
59-Tr	<p>تحتاج الى دم من بنك الدم tHtAj AlY dm mn bnk Aldm [أنت] [ف] [أاجة] [دم] [من] [بنك الدم] [Ant] f-[HAjp] [dm] [mn] [bnk Aldm] [ضروري] [سلف] [دم] [من] [بنك الدم]</p>

	[Drwry] [slf] [dm] [mn] [bnk Aldm]
60-Tr	<p>قد يسبب شعر القط والكلب الحساسية</p> <p>qd ysbb \$Er AlqT wAlklb AlHsAsyp</p> <p>[حساسية] [ممكن] [السبب] [شعر] [القط] [و] [الكلب]</p> <p>[HsAsyp] [mmkn] [Alsbb] [\$Er] [AlqT] [w] [Alklb]</p> <p>[حساسية] [في] [سبب] [ممكن] [شعر] [قطعة] [او] [كلب]</p> <p>[HsAsyp] [fy] [sbb] [mmkn] [\$Er] [qTp] [Aw] [klb]</p>
61-Tr	<p>تعاني الحامل من تساقط الشعر</p> <p>tEAny AlHAml mn tsAqT Al\$Er</p> <p>[الحامل] [مريض] [تساقط الشعر]</p> <p>[AlHAml] [mryD] [tsAqT Al\$Er]</p> <p>[الحامل] [في] [تساقط الشعر]</p> <p>[AlHAml] [fy] [tsAqT Al\$Er]</p>
62-Tr	<p>يجب عمل الفحص الطبي قبل الزواج</p> <p>yjb Eml AlfHS AlTby qbl AlzwaJ</p> <p>[الزواج] [قبل] [لازم] [عمل] [فحص طبي]</p> <p>[AlzwaJ] [qbl] [lAzm] [Eml] [fHS Tby]</p> <p>[انت] [لازم] [عمل] [فحص طبي] [قبل] [الزواج]</p> <p>[Ant] [lAzm] [Eml] [fHS Tby] [qbl] [AlzwaJ]</p>
63-Tr	<p>يكثر التهاب الأذن عند الأطفال</p> <p>ykvr AlthAb Al>*n End Al>TfAl</p> <p>[التهاب] [الاذن] [كثير] [عند] [طفل] ++</p> <p>[AlthAb] [AlA*n] [kvyr] [End] [Tfl] ++</p> <p>[التهاب] [اذن] [عند] [طفل] ++ [كثير]</p> <p>[AlthAb] [A*n] [End] [Tfl] ++ [ktyr]</p>
64-Tr	<p>يجب عليك الانتظام بالرضاعة الطبيعية</p> <p>yjb Elyk AlAntZAm bAlrDAEp AlTbyEyp</p> <p>[انت] [لازم] [استمرار] [رضاعه]</p> <p>[Ant] [lAzm] [AstmrAr] [rDAEh]</p> <p>[لازم] [رضاعة] [طفل] [مستمر]</p> <p>[lAzm] [rDAEp] [Tfl] [mstmr]</p>
65-Tr	<p>ابتعد عن الشاي والقهوة</p> <p>AbtEd En Al\$Ay wAlqhwp</p> <p>[ممنوع] [شاي] [وقهوة]</p> <p>[mmnwE] [\$Ay] [wqhwp]</p> <p>[ممنوع] [شاي] [وقهوة]</p> <p>[mmnwE] [\$Ay] [wqhwp]</p>
66-Tr	<p>استخدم ميزان حرارة لقياس درجة حرارة الجسم</p>

	<p>Astxdm myzAn HrArp lqyAs drjp HrArp Aljsm</p> <p>[انت] [استخدم] [مقياس الحرارة] [السبب] [قياس] [درجة الحرارة] [الجسم]</p> <p>[Ant] [Astxdm] [mqyAs AlHrArp] [Alsbb] [qyAs] [drjp AlHrArp] [Aljsm]</p> <p>[عمل] [ميزان] [حرارة] [قياس] [كم] [درجة حرارة] [الجسم]</p> <p>[Eml] [myzAn] [HrArp] [qyAs] [km] [drjp HrArp] [Aljsm]</p>
67-Tr	<p>لم يستطيع طبيب الجلد معالجة الحروق</p> <p>lm ystTyE Tbyb Aljld mEAljp AlHrwq</p> <p>[طبيب] [الجلد] [ممکن] [معالجة] [الحرق] [كثير] [لا]</p> <p>[Tbyb] [Aljld] [mmkn] [mEAljp] [AlHrq] [kvyr] [lA]</p> <p>[طبيب] [صعب] [علاج] [حرق] [كثير]</p> <p>[Tbyb] [SEb] [ElAj] [Hrq] [kvyr]</p>
68-Tr	<p>هل صحيح أن الإنجاب بعد سن الأربعون خطير؟</p> <p>hl SHyH >n Al<njAb bEd sn Al>rbEwn xTyr?</p> <p>[?] [ولادة] [عمر] [٤٠] [بعد] [خطر] [هل]</p> <p>[?] [wlAdp] [Emr] [40] [bEd] [xTr] [hl]</p> <p>[صح] [او] [خطأ] [حمل] [بعد] [عمر] [٤٤] [خطر] [الام؟]</p> <p>[SH] [Aw] [xT>] [Hml] [bEd] [Emr] [] [xTr] [AlAm?]</p>
69-Tr	<p>سيجري طبيب العظام لك العملية</p> <p>syjry Tbyb AlEZAm lk AlEmlyp</p> <p>[طبيب] [العظم] [فعمل] [انت] [عملية]</p> <p>[Tbyb] [AlEZm] f-[Eml] [Ant] [Emlyp]</p> <p>[انت] [عملية] [مسئول] [طبيب] [عظم]</p> <p>[Ant] [Emlyp] [ms}wl] [Tbyb] [EZm]</p>
70-Tr	<p>ما اسم المريض؟</p> <p>mA Asm AlmryD?</p> <p>[?] [مريض] [اسم] [ماذا]</p> <p>[?] [mryD] [Asm] [mA*A]</p> <p>[مريض] [اسم]</p> <p>[mryD] [Asm]</p>
71-Tr	<p>يزود الجهاز التنفسي الإنسان بالأكسجين</p> <p>yzwd AljhAz Altnfsy Al<nsAn bAl>ksjyn</p> <p>[الجهاز التنفسي] [فإعطاء] [الإنسان] [الأكسجين]</p> <p>[AljhAz Altnfsy] f-[AETA'] [Al<nsAn] [Al>ksjyn]</p> <p>[الجهاز التنفسي] [مسئول] [أكسجين] [الإنسان]</p> <p>[AljhAz Altnfsy] [ms}wl] [Aksjyn] [Al<nsAn]</p>
72-Tr	<p>قد تسبب جرثومة المعدة سرطان المعدة</p> <p>qd tusbb jrvwmp AlmEdp srTAn AlmEdp</p>

	<p>[ممكن] [سرطان] [المعدة] [السبب] [جرثومة المعدة] [mmkn] [srTAn] [AlmEdp] [Alsbb] [jrvwmp AlmEdp] [مرض] [المعدة] [ممكن] [مرض السرطان] [في] [جرثومة المعدة] [mrD] [AlmEdp] [mmkn] [mrD AlsrTAn] [fy] [jrvwmp AlmEdp]</p>
73-Tr	<p>سيقوم الطبيب بعمل زراعة أنسجة للمريض syqwm AlTbyb bEml zrAEp >nsjp llmryD [قريبا] [الطبيب] [عمل] [زراعة] [أنسجة] [في] [المريض] [qrybA] [AlTbyb] [Eml] [zrAEp] [>nsjp] [fy] [AlmryD] [قريبا] [طبيب] [عمل] [زراعة] [أنسجة] [مريض] [qrybA] [Tbyb] [Eml] [zrAEh] [Ansip] [mryD]</p>
74-Tr	<p>قد يسبب العلاج ألم في البطن qd ysbb AlElAj >lm fy AlbTn [ممكن] [العلاج] [سبب] [بطن] [ألم] [mmkn] [AlElAj] [sbb] [bTn] [Alm] [ممكن] [دواء] [ألم] [بطن] [mmkn] [dwA'] [Alm] [bTn]</p>
75-Tr	<p>قم باستبدال سماعة الأذن كل فترة qm bAstbdAl smAEp Al>*n kl ftrp [لازم] [سماعة أذن] [استبدال] [دائما] [lAzm] [smAEp >*n] [AstbdAl] [dA}mA] [لازم] [سماعة اذن] [تبدل] [مرة] [مرة] [lAzm] [smAEh A*n] [tbdy] [mrp] [mrp]</p>
76-Tr	<p>هناك جرح نازف في ساقي hnAk jrH nAzf fy sAqy [هناك] [جرح نازف] [في] [أنا] [رجل] [hnAk] [jrH nAzf] [fy] [AnA] [rjl] [أنا] [رجل] [في] [جرح نازف] [AnA] [rjl] [fy] [jrH nAzf]</p>
77-Tr	<p>من أهم أسباب السرطان تلوث البيئة mn >hm >sbAb AlsrTAn tlvv Alby}p [مرض السرطان] [السبب] [البيئة] [تلوث] [mrD AlsrTAn] [Alsbb] [Alby}p] [tlwv] [سبب] [مرض سرطان] [تلوث] [البيئة] [sbb] [mrD srTAn] [tlwv] [Alby}p]</p>
78-Tr	<p>هناك ألم في الرأس hnAk Alm fy AlrAs [ألم] [ف] [وجود] [في] [الرأس]</p>

	<p>[Alm] f-[mwjwd] [fy] [AlrAs] [هنا] [الم] [hnA] [Alm]</p>
79-Tr	<p>سيقوم الطبيب بتشريح الجمجمة syqwm AlTbyb bt\$ryH Aljnmjp [قريباً] [الطبيب] [فعمل] [تشريح] [الجمجمة] [qrybA] [AlTbyb] f-[Eml] [t\$ryH] [Aljnmjp] [قريباً] [طبيب] [فعمل] [تشريح] [الجمجمة] [qrybA] [Tbyb] f-[Eml] [t\$ryH] [Aljnmjp]</p>
80-Tr	<p>تتسبب الكسور في ألم شديد للمريض ttsbb Alkswr fy >lm \$dyd llmryD [المريض] [الم] [قوي] [السبب] [كسر] [ثلاثة] [AlmryD] [Alm] [qwy] [Alsbb] [ksr] [vlAvp] [سبب] [كسر] [في] [الم] [قوي] [sbb] [ksr] [fy] [Alm] [qwy]</p>
81-Tr	<p>نصحي طبيب الأسنان بعمل تقويم nSHny Tbyb Al>snAn bEml tqwym [طبيب] [الاسنان] [فكلام] [انا] [لازم] [عمل] [تقويم] [Tbyb] [AlAsnAn] f-[klAm] [AnA] [lAzm] [Eml] [tqwym] [طبيب] [فكلام] [تقويم] [اسنان] [احسن] [Tbyb] f-[klAm] [tqwym] [AsnAn] [AHsn]</p>
82-Tr	<p>سأزور طبيب الأسنان غداً s>zwr Tbyb Al>snAn gdA [غدا] [انا] [فذهاب] [طبيب] [الاسنان] [gdA] [AnA] f-[*hAb] [Tbyb] [AlAsnAn] [غدا] [فذهاب] [طبيب] [اسنان] [gdA] f-[*hAb] [Tbyb] [AsnAn]</p>
83-Tr	<p>الشاي والقهوة غير مناسبة للأطفال Al\$Ay wAlqhwp gyr mnAsbp ll>TfAl [الشاي] [و] [القهوة] [ممنوع] [طفل] [Al\$Ay] [w] [Alqhwp] [mmnwE] [Tfl] [شاي] [و] [قهوة] [ممنوع] [طفل] [\$Ay] [w] [qhwp] [mmnwE] [Tfl]</p>
84-Tr	<p>عندك ألم بسيط بسبب التعرض لهواء بارد Endk >lm bsyT bsbb AltErD lhwA' bArd [انت] [في] [الم] [قليل] [السبب] [الهواء] [البارد] [Ant] [fy] [Alm] [qlyl] [Alsbb] [AlhwA'] [AlbArd]</p>

	<p>[انت] [في] [الم] [قليل] [سبب] [الهواء] [البارد] [Ant] [fy] [Alm] [qlyl] [sbb] [Alhwa'] [AlbArd]</p>
85-Tr	<p>تجنب أي انفعالات في الفترة القادمة tjnb >y AnfEAIAAt fy Alftrp AlqAdmp [مستقبل] [انفعال] [كثير] [لا] [mstqbl] [AnfEAIA] [kvyr] [lA] [لازم] [يوجد] [لا] [عصبي] [ثاني] [مرة] [lAzm] [ywj] [lA] [ESby] [vAny] [mrp]</p>
86-Tr	<p>ينظر المصابون بالتوحد إلى يد المتكلم ynZr AlmSAbwn bAltwhd <IY yd Almtklm [مريض] [كثير] [التوحد] [فإنظر] [إلى] [يد] [المتكلم] [mryD] [kvyr] [Altwhd] f-[nZr] [<IY] [yd] [Almtklm] [مريض] [التوحد] [فإنظر] [إلى] [يد] [المتكلم] [mryD] [Altwhd] f-[nZr] [AIY] [yd] [Almtklm]</p>
87-Tr	<p>يؤثر الجوع على الجهاز الهضمي y&vr AljwE ElY AljhAz AlhDmy [الجوع] [فإنظر] [على] [الجهاز الهضمي] [AljwE] f-[tAvyr] [ElY] [AljhAz AlhDmy] [الجوع] [فإنظر] [الجهاز الهضمي] [AljwE] f-[t>vyr] [AljhAz AlhDmy]</p>
88-Tr	<p>هل عانيتي من صعوبات خلال حملك السابق؟ hl EAnyty mn SEwbAt xlAl Hmlk AlsAbq? [؟] [قبل] [حمل] [موجود] [مشكلة] [هل] [?] [qbl] [Hml] [mwjwd] [m\$klp] [hl] [انت] [زمان] [حمل] [في] [مشكلة] [أو] [لا] [Ant] [zmAn] [Hml] [fy] [m\$klp] [Aw] [lA]</p>
89-Tr	<p>الرضاعة الطبيعية مهمة للرضع أثناء الاسهال AlrDAEp AlTbyEyp mhmp llrDE AvnA' AlAshAl [لازم] [رضاعة] [الام] [اثناء] [اسهال] [lAzm] [rDAEp] [AlAm] [AvnA'] [AshAl] [لازم] [رضاعة] [الام] [وقت] [في] [اسهال] [lAzm] [rDAEp] [AlAm] [wqt] [fy] [AshAl]</p>
90-Tr	<p>لا تشرب المواد الساخنة خلال ٢٤ ساعة القادمة lA t\$rb AlmwAd AlsAxnp xlAl 24 sAEp AlqAdmp [٢٤] [ساعة] [ممنوع] [فإنظر] [كثير] [ساخن] [24] [sAEp] [mmnwE] f-[\$rb] [kvyr] [sAxn] [ممنوع] [فإنظر] [حامي] [وقت] [كم] [٢٤] [ساعة]</p>

	[mmnwE] f-[\$rb] [HAmY] [wqt] [km] [] [sAEp]
91-Tr	<p>هل لديك تحويل من دكتور آخر؟ hl ldyk tHwyl mn dktwr —xr? [?] [انت] [فحويل] [طبيب] [آخر] [هل] [?] [Ant] f-[tHwyl] [Tbyb] [Axr] [hl] [انت] [في] [طبيب] [فحويل] [ثاني] [Ant] [fy] [Tbyb] f-[tHwyl] [vAny]</p>
92-Tr	<p>وصف لي النظارة طبيب العيون wSf ly AlnZArp Tbyb AlEywn [طبيب] [العيون] [فكلام] [انا] [نظارة] [Tbyb] [AlEywn] f-[klAm] [AnA] [nZArp] [نظارة] [سبب] [فكلام] [طبيب] [العيون] [nZArp] [sbb] f-[klAm] [Tbyb] [AlEywn]</p>
93-Tr	<p>كيف أصبت في الجمجمة؟ kyf >Sbt fy Aljmmjp? [?] [أنت] [فإصابة] [الجمجمة] [كيف] [?] [>nt] f-[ASAbp] [Aljmmjp] [kyf] [انت] [كيف] [فإصابة] [الجمجمة] [؟] [Ant] [kyf] f-<SAbp] [Aljmmjp] [?]</p>
94-Tr	<p>يجب عمل فحص دم yjb Eml fHS dm [لازم] [فعمل] [فخص] [دم] [lAzm] f-[Eml] [fHS] [dm] [لازم] [فعمل] [فخص] [دم] [lAzm] f-[Eml] [fHS] [dm]</p>
95-Tr	<p>احذر من تطعيم الأطفال أثناء إصابتهم بالحساسية AH*r mn tTEym Al>TfAl >vnA' <SAbthm bAlHsAsyp [ممنوع] [طفل] [كثير] [فقط] [اثناء] [حساسية] [موجودة] [mmnwE] [Tfl] [kvyr] f-[tTEym] [AvnA'] [HsAsyp] [mwjwdp] [مثلا] [طفل] [في] [حساسية] [ممنوع] [فقط] [mv1A] [Tfl] [fy] [HsAsyp] [mmnwE] f-[tTEym]</p>
96-Tr	<p>إدمان المخدرات أخطر أنواع الإدمان <dmAn AlmxdrAt >xTr >nwAE Al<dmAn [إدمان] [المخدرات] [خطير] [نوع] [كثير] [إدمان] [<dmAn] [AlmxdrAt] [xTyr] [nwE] [kvyr] [AdmAn] [الإدمان] [المخدرات] [خطير] [نوع] [كثير] [الإدمان] [Al<dmAn] [AlmxdrAt] [xTyr] [nwE] [kvyr] [Al<dmAn]</p>

97-Tr	<p>يحيط القفص الصدري بالقلب yHyT AlqfS AlSdry bAlqlb [القلب] [داخل] [القفص الصدري] [Alqlb] [dAxl] [AlqfS AlSdry] [القلب] [داخل] [القفص الصدري] [Alqlb] [dAxl] [AlqfS AlSdry]</p>
98-Tr	<p>يجب تنظيف الجرح من الأوساخ yjb tnZyf AljrH mn Al>wsAx [لازم] [نظافة] [الجرح] [من] [وسخ] [lAzm] [nZAfp] [AljrH] [mn] [wsx] [لازم] [فـنظافة] [جرح] [من] [وسخ] [lAzm] f-[nZAfp] [jrH] [mn] [wsx]</p>
99-Tr	<p>الإدمان سبب رئيسي في أمراض القلب Al<dmAn sbb r}ysy fy >mrAD Alqlb [الإدمان] [سبب] [رئيسي] [مرض] [كثير] [القلب] [Al<dmAn] [sbb] [r}ysy] [mrD] [kvyr] [Alqlb] [الإدمان] [السبب] [مرض] [القلب] [Al<dmAn] [Alsbb] [mrD] [Alqlb]</p>
100-Tr	<p>أعاني من صداع دائم >EAny mn SdAE dA}m [أنا] [دائماً] [الم] [صداع] [AnA] [dA}mA] [Alm] [SdAE] [أنا] [في] [صداع] [دائماً] [على] [دائماً] [AnA] [fy] [SdAE] [dA}mA] [EIY] [dA}mA]</p>
101-Tr	<p>ضع نقاط من الدواء في العين DE nqAT mn AldwA' fy AlEyn [أنت] [فـعمل] [قطر] [الدواء] [داخل] [العين] [Ant] f-[Eml] [qTr] [AldwA'] [dAxl] [AlEyn] [فـعمل] [قطرة] [للعين] f-[Eml] [qTrp] [llEyn]</p>
102-Tr	<p>ما فصيلة دمك؟ mA fSylp dmk? [؟] [أنت] [دم] [نوع] [ماذا] [?] [Ant] [dm] [nwE] [mA*A] [أنت] [دم] [نوع] [أيش] [Ant] [dm] [nwE] [Ay\$]</p>

103-Tr	<p>يجب على المرأة الحامل تناول قليل من الشاي yjb ElY Almr>p AlHAmI tnAwI qlYl mn Al\$Ay [لازم] [الحامل] [شرب] [قليل] [شاي] [lAzm] [AlHAmI] [\$rb] [qlYl] [\$Ay] [حامل] [لازم] [شرب] [شاي] [قليل] [فقط] [كثير] [ممنوع] [HAmI] [lAzm] [\$rb] [\$Ay] [qlYl] [fqT] [kvYr] [mmnwE]</p>
104-Tr	<p>سيتم معالجة الإعاقة في المستقبل sytm mEAljp Al<EAqp fy Almstqbl [ممكن] [المستقبل] [علاج] [إعاقة] [mmkn] [Almstqbl] [ElAj] [<EAqp] [ممكن] [المستقبل] [في] [علاج] [إعاقة] [mmkn] [Almstqbl] [fy] [ElAj] [AEAqp]</p>
105-Tr	<p>سيتم تحويلك إلى قسم الجروح sytm tHwylk <lY qsm AljrwH [قريبا] [أنت] [ف] [تحويل] [قسم] [الجروح] [qrybA] [>nt] f-[tHwyl] [qsm] [AljrwH] [قريبا] [أنت] [في] [ف] [تحويل] [إلى] [قسم] [الجروح] [qrybA] [Ant] [fy] f-[tHwyl] [AlY] [qsm] [AljrwH]</p>
106-Tr	<p>عند انكسار يدك يجب عليك ان تذهب الى طبيب العظام End AnksAr ydk yjb Elyk An t*hb AlY Tbyb AlEZAm [أنت] [يد] [كسر] [لازم] [أنت] [ف] [ذهاب] [طبيب] [العظام] [Ant] [yd] [ksr] [lAzm] [Ant] f-[*hAb] [Tbyb] [AlEZm] [مثلا] [يد] [في] [كسر] [لازم] [ف] [ذهاب] [إلى] [طبيب] [العظام] [mvIA] [yd] [fy] [ksr] [lAzm] f-[*hAb] [AlY] [Tbyb] [AlEZAm]</p>
107-Tr	<p>هل تشعر بألم في الرأس؟ hl t\$Er b>lm fy Alr>s? [؟] [أنت] [ف] [موجود] [ألم] [الرأس] [هل] [?] [Ant] f-[mwjwd] [Alm] [AlrAs] [hl] [في] [ألم] [رأس] [؟] [fy] [Alm] [rAs] [?]</p>
108-Tr	<p>تتسبب الحصى في مغص الكلى ttsbb AlHSY fy mgS AlklY [مغص] [الكلى] [السبب] [الحصى] [mgS] [AlklY] [Alsbb] [AlHSY] [مغص] [كلى] [سبب] [حصى] [mgS] [klY] [sbb] [HSY]</p>
109-Tr	<p>يؤلمني الشريط اللاصق</p>

	<p>y&lmny Al\$ryT AllASq [أنا] [ألم] [سبب] [الشريط الاصق] [>nA] [>lm] [sbb] [Al\$ryT AllASq] [أنا] [في] [ألم] [السبب] [شريط لاصق] [AnA] [fy] [Alm] [Alsbb] [\$ryT lASq]</p>
110-Tr	<p>لدي صداع شديد ldy SdAE \$dyd [أنا] [في] [صداع] [قوي] [AnA] [fy] [SdAE] [qwy] [أنا] [في] [صداع] [شديد] [AnA] [fy] [SdAE] [\$dyd]</p>
111-Tr	<p>اذهب إلى طبيب البطن عند الشعور بالغص A*hb <IY Tbyb AlbTn End Al\$Ewr bAlmgS [أنت] [ف] [اشعور] [مغص] [لازم] [أنت] [ف] [ذهاب] [طبيب] [البطن] [Ant] f-[A\$Ewr] [mgS] [lAzm] [Ant] f-[*hAb] [Tbyb] [AlbTn] [مثلا] [في] [مغص] [ف] [روح] [طبيب] [بطن] [mvIA] [fy] [mgS] f-[rwH] [Tbyb] [bTn]</p>
112-Tr	<p>الرياضة تساعد على التخلص من السمّة AlryADp tsAEEd EIY AltxlS mn Alsmnp [الرياضة] [مساعدة] [سمّة] [يوجد] [لا] [AlryADp] [msAEdp] [smnp] [ywj] [lA] [رياضة] [مساعدة] [سمّة] [لا] [ryADp] [msAEdp] [smnp] [lA]</p>
113-Tr	<p>هل لديك ملف في المستشفى؟ hl ldyk mlf fy Almst\$fY? [؟] [أنت] [موجود] [ملف] [في] [المستشفى] [هل] [?] [Ant] [mwjwd] [mlf] [fy] [Almst\$fY] [hl] [في] [أول] [ملف] [هنا] [مستشفى] [fy] [Awl] [mlf] [hnA] [mst\$fY]</p>
114-Tr	<p>حليب الأم مهم للأطفال Hlyb Al>m mhm ll>TfAl [حليب] [أم] [مهم] [طفل] [Hlyb] [Am] [mhm] [Tfl] [أم] [رضاعة] [حليب] [مهم] [الطفل] [Am] [rDAEp] [Hlyb] [mhm] [AlTfl]</p>
115-Tr	<p>سيتم تحويلك إلى طبيب البطن sytm tHwylk <IY Tbyb AlbTn [قريبا] [أنت] [ف] [تحويل] [طبيب] [البطن]</p>

	<p>[qrybA] [Ant] f-[tHwyl] [Tbyb] [AlbTn] ف[تحويل] [طبيب] [بطن] f-[tHwyl] [Tbyb] [bTn]</p>
116-Tr	<p>تساعد المشروبات الساخنة على إيقاف البرد tsAEd Alm\$rwAt AlsAxnp ElY <yqAf Albrd [شراب] [كثير] [ساخن] ف[مساعدة] [وقف] [برد] [\$rAb] [kvyr] [sAxn] f-[msAEdp] [wqf] [brd] [شراب] [ساخن] [ممتاز] ف[مساعدة] [برد] [وقف] [\$rAb] [sAxn] [mmtAz] f-[msAEdp] [brd] [wqf]</p>
117-Tr	<p>التدخين سبب رئيسي لحرقان المعدة Altdxyn sbb r}ysy lHrqAn AlmEdp [حرقان المعدة] [السبب] [رقم] [واحد] [التدخين] [HrqAn AlmEdp] [Alsbb] [rqm] [wAHd] [Altdxyn] [تدخين] [سبب] [حرقة] [معدة] [tdxyn] [sbb] [Hrqp] [mEdp]</p>
118-Tr	<p>هل زرت طبيب الأنف والأذن من قبل؟ hl zrt Tbyb Al>nf wAl>*n mn qbl? [؟] [قبل] [انت] ف[ذهاب] [طبيب] [الأنف] [الأذن] [هل] [?] [qbl] [Ant] f-[*hAb] [Tbyb] [AlAnf] [AlA*n] [hl] [في] [قبل] ف[ذهاب] [طبيب] [أنف] [أذن] [fy] [qbl] f-[*hAb] [Tbyb] [Anf] [A*n]</p>
119-Tr	<p>يجب الحفاظ على الجرح نظيف yjb AlHfAZ ElY AljrH nZyf [لازم] [الجرح] [نظيف] [lAzm] [AljrH] [nZyf] [لازم] [الجرح] [نظيف] [lAzm] [AljrH] [nZyf]</p>
120-Tr	<p>فحص الأمراض الوراثية مهم قبل الزواج fHS Al>mrAD AlwrAvyp mhm qbl AlzwAj [الزواج] [قبل] [لازم] ف[فحص] [مرض] [وراثية] [AlzwAj] [qbl] [lAzm] f-[fHS] [mrD] [wrAvp] [لازم] [فحص] [قبل] [زواج] [سبب] [بحث] [أمراض] [وراثية] [lAzm] [fHS] [qbl] [zwAj] [sbb] [bHv] [AmrAD] [wrAvp]</p>
121-Tr	<p>أجلس في قاعة الانتظار حتى نناديك >jls fy qAEp AlAntZAr HtY nnAdyk [انت] ف[انتظار] [حتى] [نحن] [نداء] [لك] [Ant] f-[AntZAr] [HtY] [nHn] [ndA'] [lk]</p>

	<p>[انت] [اجلس] [هنا] [فانتظار] [بعد] [انا] [فنداء] [لك] [Ant] [Ajls] [hnA] f-[AntZAr] [bEd] [AnA] f-[ndA'] [lk]</p>
122-Tr	<p>يحتوي الملف على بيانات المريض yHtwy Almlf ElY byAnAt AlmryD [الملف] [داخل] [المريض] [بيانات] [Almlf] [dAxl] [AlmryD] [byAnAt] [ملف] [داخل] [ماذا] [البيانات] [مثل] [اسم] [العمر] [mlf] [dAxl] [mA*A] [AlbyAnAt] [mvl] [Asm] [AlEmr]</p>
123-Tr	<p>حرك المصاب بحذر Hrk AlmSAb bH*r [انت] [حركة] [المصاب] [قوي] [لا] [Ant] [Hrkp] [AlmSAb] [qwy] [lA] [انتبه] [حركة] [مصاب] [Antbh] [Hrkp] [mSAb]</p>
124-Tr	<p>اعطي الطفل المصاب بالإسهال ماء كثير AETy AlTfl AlmSAb bAl<shAl mA' kvyr [انت] [فيعطي] [الطفل] [مصاب] [إسهال] [ماء] [كثير] [Ant] f-[yETy] [AlTfl] [mSAb] [AshAl] [mA'] [kvyr] [طفل] [مصاب] [إسهال] [فيعطي] [ماء] [كثير] [Tfl] [mSAb] [AshAl] f-[yETy] [mA'] [kvyr]</p>
125-Tr	<p>الإكثار من المضادات ينقص المناعة Al<kvAr mn AlmDAdAt ynqS AlmnAEp [مضاد] [كثير] [اكل] [كثير] [سبب] [نقص المناعة] [mDAd] [kvyr] [Akl] [kvyr] [sbb] [nqS AlmnAEp] [شرب] [مضاد] [كثير] [دائماً] [مسئول] [نقص المناعة] [\$rb] [mDAd] [kvyr] [dA}mA] [ms}wl] [nqS AlmnAEp]</p>
126-Tr	<p>يعود السكر بعد الولادة إلى طبيعته yEwd Alskr bEd AlwlAdp <lY TbyEth [الحمل] [بعد] [مرض السكري] [بدل] [طبيعي] [AlHml] [bEd] [mrD Alskry] [bdl] [TbyEy] [بعد] [الولادة] [مرض سكري] [بدل] [طبيعي] [bEd] [AlwlAdp] [mrD skry] [bdl] [TbyEy]</p>
127-Tr	<p>دورة تدريبية في الإسعافات الأولية dwrp tdrybyp fy Al<sEAfAt Al>wlyp [دورة] [تدريب] [إسعافات اولية] [dwrp] [tdryb] [AsEAfAt Awlyp] [دورة] [تدريب] [إسعافات اولية]</p>

	[dwrp] [tdryb] [AsEAfAt Awlyp]
128-Tr	<p>استخدمت الممرضة جهاز قياس الضغط</p> <p>Astxdmt AlmmrDp jhAz qyAs AlDgT</p> <p>[قبل] [الممرضة] [ف] [استخدم] [جهاز قياس الضغط]</p> <p>[qbl] [AlmmrDp] f-[Astxdm] [jhAz qyAs AlDgT]</p> <p>[قبل] [ممرضة] [ف] [عمل] [جهاز قياس ضغط]</p> <p>[qbl] [mmrDp] f-[Eml] [jhAz qyAs DgT]</p>
129-Tr	<p>أنت تعاني من السكري</p> <p>>nt tEAny mn Alskry</p> <p>[انت] [في] [مرض سكري]</p> <p>[Ant] [fy] [mrD skry]</p> <p>[انت] [في] [مرض سكري] [مرض]</p> <p>[Ant] [fy] [mrD skry] [mrD]</p>
130-Tr	<p>يجب إزالة التالف من الفاكهة قبل الأكل</p> <p>yjb <zAlp AltAlf mn AlfAkhq qbl Al>kl</p> <p>[اكل] [قبل] [لازم] [ازلة] [الفاكهة] [سيء]</p> <p>[Akl] [qbl] [lAzm] [Azlp] [AlfAkhq] [sy']</p> <p>[فواكة] [عفن] [لازم] [قص] [قبل] [الاكل]</p> <p>[fwAkp] [Efn] [lAzm] [qS] [qbl] [AlAkl]</p>
131-Tr	<p>أصبت بالزكام بعد الاستحمام</p> <p>>Sbt bAlzkAm bEd AlAstHmAm</p> <p>[استحمام] [بعد] [أنا] [مريض] [زكام]</p> <p>[AstHmAm] [bEd] [>nA] [mryD] [zkAm]</p> <p>[انا] [ف] [إصابة] [زكام] [الاستحمام] [بعد]</p> <p>[AnA] f- [<SAbp] [zkAm] [AlAstHmAm] [bEd]</p>
132-Tr	<p>يستخدم هذا المرهم كمخدر موضعي</p> <p>ystxdm h*A Almrhm kmxdr mwDEy</p> <p>[هذا] [المخدر] [استخدام] [مخدر] [مكان] [واحد]</p> <p>[h*A] [Almxdr] [AstxdAm] [mxdr] [mkAn] [wAHd]</p> <p>[هذا] [مرهم] [نفسه] [مخدر] [مكان] [فقط]</p> <p>[h*A] [mrhm] [nfsh] [mxdr] [mkAn] [fqT]</p>
133-Tr	<p>من أعراض المرض الزكام</p> <p>mn >ErAD AlmrD AlzkAm</p> <p>[الزكام] [السبب] [مرض]</p> <p>[AlzkAm] [Alsbb] [mrD]</p> <p>[زكام] [سبب] [مرض]</p> <p>[zkAm] [sbb] [mrD]</p>

134-Tr	<p>أشعر بآلم شديد في الرقبة >\$Er b>lm \$dyd fy Alrqbp [انا] ف[شعور] [آلم] [قوي] [الرقبة] [AnA] f-[\$Ewr] [Alm] [qwy] [Alrqbp] [انا] ف[آلم] [هنا] [AnA] f-[Alm] [hnA]</p>
135-Tr	<p>يجب علاج الجرثومة بسرعة yjb ElAj Aljrvwmp bsrEp [لازم] [علاج] [الجرثومة] [سرعة] [lAzm] [ElAj] [Aljrvwmp] [srEp] [جرثومة] [لازم] [سرعة] [علاج] [jrvwmp] [lAzm] [srEp] [ElAj]</p>
136-Tr	<p>هل أجريت تحليل السكري ؟ hl >jryt tHlyl Alskry ? [؟] [قبل] [انت] [عمل] [تحليل] [مرض السكري] [هل] [?] [qbl] [Ant] [Eml] [tHlyl] [mrD Alskry] [hl] [انت] [في] [فحص] [مرض السكري] [دم] [Ant] [fy] [fHS] [mrD Alskry] [dm]</p>
137-Tr	<p>اشرب كثيراً من الماء A\$rb kvyrA mn AlmA' [لازم] [انت] [شرب] [ماء] [كثير] [lAzm] [Ant] [\$rb] [mA'] [kvyr] [لازم] [شرب] [ماء] [كثير] [lAzm] [\$rb] [mA'] [kvyr]</p>
138-Tr	<p>يحتاج المعاق إلى عناية خاصة yHtAj AlmEAq <IY EnAyp xASp [المعاق] ف[ماجة] [اهتمام] [زيادة] [AlmEAq] f-[HAjp] [AhtmAm] [zyAdp] [شخص] [معاق] [لازم] [رعاية] [خاص] [\$xS] [mEAq] [lAzm] [rEAyp] [xAS]</p>
139-Tr	<p>يكرر المصابون بالتوحد حركة اليدين ykr AlmSAbwn bAltwhd Hrkp Alydyn [مريض] [كثير] [التوحد] ف[تكرار] [حركة] [اليدين] [mryD] [kvyr] [Altwhd] f-[tkrAr] [Hrkp] [Alyd] [مريض] [التوحد] ف[حركة] [يد] [تكرار] [نفسه] [نفسه] [mryD] [Altwhd] f-[Hrkp] [yd] [tkrAr] [nfsh] [nfsh]</p>
140-Tr	<p>أين توجد عيادة طبيب القلب؟</p>

	<p>>yn twjd EyAdp Tbyb Alqlb?</p> <p>[?] [عيادة] [طبيب] [القلب] [فموجود] [اين]</p> <p>[?] [EyAdp] [Tbyb] [Alqlb] f-[mwjwd] [Ayn]</p> <p>[اين] [مكان] [عيادة] [طبيب] [قلب]</p> <p>[Ayn] [mkAn] [EyAdp] [Tbyb] [qlb]</p>
141-Tr	<p>تساعد جميع الفواكه في الحفاظ على الصحة</p> <p>tsAEd jmyE AlfwAkh fy AlHfAZ ElY AlSHp</p> <p>[كل] [الفواكه] [مساعدة] [صحة] [جيد]</p> <p>[kl] [AlfwAkp] [msAEdp] [SHp] [jyd]</p> <p>[كل] [الفواكه] [مختلف] [صحة] [ممتاز]</p> <p>[kl] [AlfwAkh] [mxtlf] [SHp] [mmtAz]</p>
142-Tr	<p>يكتشف الايدز عن طريق فحص الدم</p> <p>ykt\$ f Al<ydz En Tryq fHS Aldm</p> <p>[معرفة] [الايدز] [كيف] [عمل] [فحص] [الدم]</p> <p>[mErfp] [AlAydz] [kyf] [Eml] [fHS] [Aldm]</p> <p>[فحص] [ايدز] [كيف] [؟] [عمل] [فحص] [دم]</p> <p>[fHS] [Aydz] [kyf] [?] [Eml] [fHS] [dm]</p>
143-Tr	<p>هل أخذ الطفل تطعيم شلل الاطفال؟</p> <p>hl >x* AlTf tTEym \$ll AlATfAl?</p> <p>[?] [قبل] [الطفل] [فأخذ] [تطعيم] [الشلل] [هل]</p> <p>[?] [qbl] [AlTf] f-[Ax*] [tTEym] [Al\$ll] [hl]</p> <p>[طفل] [في] [تطعيم] [حق] [شلل]</p> <p>[Tf] [fy] [tTEym] [Hq] [\$ll]</p>
144-Tr	<p>نقص الأكسجين الحاد يؤدي إلى تغير لون الجلد</p> <p>nqS Al>ksjyn AlHAd y&dy <IY tgyr lwn Aljld</p> <p>[أكسجين] [قليل] [ممكن] [تغيير] [لون] [جلد]</p> <p>[Aksjyn] [qlyl] [mmkn] [tgyr] [lwn] [jld]</p> <p>[مثلا] [أكسجين] [ناقص] [لون] [الجلد] [تغيير]</p> <p>[mvlA] [Aksjyn] [nAqS] [lwn] [Aljld] [tgyr]</p>
145-Tr	<p>الجرح شديد في اليد</p> <p>AljrH \$dyd fy Alyd</p> <p>[الجرح] [شديد] [في] [اليد]</p> <p>[AljrH] [\$dyd] [fy] [Alyd]</p> <p>[الجرح] [قوي] [في] [اليد]</p> <p>[AljrH] [qwy] [fy] [Alyd]</p>
146-Tr	<p>يجب زيارة طبيب العيون عند ضعف النظر</p> <p>yjb zyArp Tbyb AlEywn End DEf AlnZr</p>

	<p>[نظر] [ضعيف] [لازم] [فذهاب] [طبيب] [العيون] [nZr] [DEyf] [lAzm] f-[*hAb] [Tbyb] [AlEywn] [مثلا] [نظر] [ضعيف] [لازم] [فذهاب] [الطبيب] [mvlA] [nZr] [DEyf] [lAzm] f-[*hAb] [AlTbyb]</p>
147-Tr	<p>لديك حمى بسبب التهابات ldyk HmY bsbb AlAlthAbAt [انت] [في] [حمى] [السبب] [التهاب] [كثير] [Ant] [fy] [HmY] [Alsbb] [AlthAb] [kvyr] [انت] [في] [حمى] [سبب] [التهاب] [Ant] [fy] [HmY] [sbb] [AlthAb]</p>
148-Tr	<p>درجة حرارتك عالية drjp HrArtk EAlyp [انت] [درجة حرارة] [مرتفع] [Ant] [drjp HrArp] [mrtfE] [انت] [حمى] [كثير] [Ant] [HmY] [kvyr]</p>
149-Tr	<p>تجنب أكل الموز للتخلص من الحساسية tjnb >kl Almwz lltxlS mn AlHsAsyp [ممنوع] [اكل] [الموز] [السبب] [وقف] [حساسية] [mmnwE] [Akl] [Almwz] [Alsbb] [wqf] [HsAsyp] [ممنوع] [موز] [سبب] [وقف] [حساسية] [mmnwE] [mwz] [sbb] [wqf] [HsAsyp]</p>
150-Tr	<p>لا تأخذ الدواء بدون علم الطبيب lA t>x* AldwA' bdwn Elm AlTbyb [انت] [ممنوع] [فأخذ] [علاج] [بدون] [طبيب] [Ant] [mmnwE] f-[Ax*] [ElAj] [bdwn] [Tbyb] [ممنوع] [دواء] [بدون] [امر] [طبيب] [mmnwE] [dwA'] [bdwn] [Amr] [Tbyb]</p>
151-Tr	<p>يسبب الإدمان الغيوبة ysbb Al<dmAn Algybwbp [الإدمان] [سبب] [غيوبة] [Al<dmAn] [sbb] [gybwbp] [الإدمان] [سبب] [غيوبة] [Al<dmAn] [sbb] [gybwbp]</p>
152-Tr	<p>الإقلال من السكريات يقلل من الإصابة بالسكري Al<qlAl mn AlskryAt yqll mn Al<SAbp bAlskry [اكل] [سكر] [قليل] [فمساعدة] [إصابة] [سكر] [Akl] [skr] [qlyl] f-[msAEdp] [<SAbp] [skr]</p>

	<p>[اكل] [سكر] [قليل] ف[مساعدة] [مرض] [سكر] [يوجد] [لا] [Akl] [skr] [qlyl] f-[msAEdp] [mrD] [skr] [ywj] [lA]</p>
153-Tr	<p>الصيدلية في الدور الأول AlSydlyp fy Aldwr Al>wl [الصيدلية] [موجود] [الطابق] [الأول] [AlSydlyp] [mwjwd] [AlTAbq] [Al>wl] [الصيدلية] [مكان] [طابق] [الأول] [AlSydlyp] [mkAn] [TAbq] [Al>wl]</p>
154-Tr	<p>هذه الأشعة تطلب غالباً من طبيب القلب h*h Al>\$Ep tTlb gAlbA mn Tbyb Alqlb [هذه] [الاشعة] [سبب] [طبيب] [القلب] [h*h] [AlA\$Ep] [sbb] [Tbyb] [Alqlb] [الاشعة] [هذا] [سبب] [طبيب] [قلب] [AlA\$Ep] [h*A] [sbb] [Tbyb] [qlb]</p>
155-Tr	<p>هل أنت متزوج؟ hl >nt mtzwj? [؟] [انت] [متزوج] [هل] [?] [Ant] [mtzwj] [hl] [انت] [زواج] [في] [Ant] [zwAj] [fy]</p>
156-Tr	<p>ستكون ولادة طبيعية stkwn wAdp TbyEyp [انت] [في] [ولادة] [طبيعية] [Ant] [fy] [wAdp] [TbybEyp] [انت] [في] [ولادة] [طبيعية] [Ant] [fy] [wAdp] [TbyEyp]</p>
157-Tr	<p>يحتاج المريض إلى المراقبة في غرفة العمليات yHtAj AlmryD <lY AlmrAqbp fy grfp AlEmlyAt [مريض] ف[ماجة] [مراقبة] [داخل] [غرفة] [العملية] [mryD] f-[HAjp] [mrAqbp] [dAxl] [grfp] [AlEmlyp] [المريض] [لازم] [مراقبة] [في] [غرفة] [العملية] [AlmryD] [lAzm] [mrAqbp] [fy] [grfp] [AlEmlyp]</p>
158-Tr	<p>مازال المريض في غرفة العمليات mAzAl AlmryD fy grfp AlEmlyAt [المريض] [مازال] [داخل] [غرفة] [العملية] [AlmryD] [mAzAl] [dAxl] [grfp] [AlEmlyp] [المريض] [مازال] [في] [غرفة] [العملية]</p>

	[AlmryD] [mAzAl] [fy] [grfp] [AlEmlyp]
159-Tr	تسبب الحادث في كسر الجمجمة tsbb AlHAdv fy ksr Aljmjmp [قبل] [الحادث] [سبب] [كسر] [الجمجمة] [qbl] [AlHAdv] [sbb] [ksr] [Aljmjmp] [كسر] [الجمجمة] [السبب] [حادث] [ksr] [Aljmjmp] [Alsbb] [HAdv]
160-Tr	المصابون بالشلل النصفي لا يمشون AlmSAbwn bAl\$ll AlnSfy lAym\$wn [مريض] [كثير] [شلل نصفي] [فمشي] [لا] [mryD] [kvyr] [\$ll nSfy] f-[m\$y] [lA] [مصاب] [شلل نصفي] [فمشي] [لا] [mSAb] [\$ll nSfy] f-[m\$y] [lA]
161-Tr	هل أخذت الإبرة اليوم؟ hl >x*t Al<brp Alywm? [؟] [اليوم] [أنت] ف[أخذ] [إبرة] [هل] [?] [Alywm] [>nt] f-[>x*] [<brp] [hl] [أنت] [عمل] [أبره] [اليوم] [؟] [Ant] [Eml] [Abrh] [Alywm] [?]
162-Tr	قد تتسبب الشمس ببعض الحروق qd ttsbb Al\$ms bbED AlHrwq [ممكن] [الشمس] ف[سبب] [الحرق] [كثير] [mmkn] [Al\$ms] f-[sbb] [AlHrq] [kvyr] [الشمس] [في] [عمل] [حرق] [كثير] [Al\$ms] [fy] [Eml] [Hrq] [kvyr]
163-Tr	يجب التأكد من زوال الحمى yzb Alt>kd mn zwAl AlHmY [لازم] [حمى] [أكيد] [اتهي] [lAzm] [HmY] [Akyd] [AnthY] [لازم] [حمى] [أكيد] [وقف] [اتهي] [lAzm] [HmY] [Akyd] [wqf] [AnthY]
164-Tr	لدي تحويل إلى هذا المستشفى ldy tHwyl <lY h*A Almst\$fY [أنا] [موجود] [تحويل] [هذا] [المستشفى] [AnA] [mwjwd] [tHwyl] [h*A] [Almst\$fY] [أنا] [في] [تحويل] [إلى] [هنا] [AnA] [fy] [tHwyl] [AlY] [hnA]

165-Tr	<p>يعتبر الشاي والقهوة مكثرات للبول</p> <p>yEtbr Al\$Ay wAlqhwp mkvrAt llbwI</p> <p>[الشاي] [و] [القهوة] [ف] [سبب] [بول] [كثير]</p> <p>[Al\$Ay] [w] [Alqhwp] f-[sbb] [bwI] [kvyr]</p> <p>[شاي] [و] [قهوة] [ف] [سبب] [بول] [كثير]</p> <p>[\$Ay] [w] [qhwp] f-[sbb] [bwI] [kvyr]</p>
166-Tr	<p>بعد التطعيم قد يصاب الطفل بالحمى</p> <p>bEd AltTEym qd ySAb AlTfl bAlHmY</p> <p>[التطعيم] [بعد] [يمكن] [الطفل] [إصابة] [حمى]</p> <p>[AltTEym] [bEd] [mmkn] [AlTfl] [ASAbp] [HmY]</p> <p>[يمكن] [بعد] [تطعيم] [طفل] [في] [حمى]</p> <p>[mmkn] [bEd] [tTEym] [Tfl] [fy] [HmY]</p>
167-Tr	<p>يساعد الحليب قبل النوم على التخلص من الأرق</p> <p>ysAEd AlHlyb qbl Alnwm ElY AltxlS mn Al>rq</p> <p>[النوم] [قبل] [الحليب] [مساعدته] [سهر] [لا]</p> <p>[Alnwm] [qbl] [AlHlyb] [msAEdh] [shr] [lA]</p> <p>[نوم] [يوجد] [لا] [أشرب] [حليب] [قبل] [النوم]</p> <p>[nwm] [ywjdl] [lA] [A\$rb] [Hlyb] [qbl] [Alnwm]</p>
168-Tr	<p>القصة الهوائية جزء من الجهاز التنفسي</p> <p>AlqSbp Alhwa}yp jz' mn AljhAz Altnfsy</p> <p>[القصة الهوائية] [جزء] [من] [الجهاز التنفسي]</p> <p>[AlqSbp Alhwa}yp] [jz'] [mn] [AljhAz Altnfsy]</p> <p>[القصة الهوائية] [جزء] [الجهاز التنفسي]</p> <p>[AlqSbp Alhwa}yp] [Hz'] [AljhAz Altnfsy]</p>
169-Tr	<p>انتظر حتى يكمل الدكتور العملية</p> <p>AntZr HtY ykml Aldktwr AlEmlyp</p> <p>[انت] [انتظار] [حتى] [الطبيب] [اتهي] [عملية] [جراحية]</p> <p>[Ant] [AntZAr] [HtY] [AlTbyb] [AnthY] [Emlyp] [jrAHyp]</p> <p>[انت] [انتظار] [هنا] [سبب] [طبيب] [مشغول] [عملية]</p> <p>[Ant] [AntZAr] [hnA] [sbb] [Tbyb] [m\$gwl] [Emlyp]</p>
170-Tr	<p>هل ترضعين الطفل؟</p> <p>hl trDEyn AlTfl?</p> <p>[؟] [انت] [ف] [رضاعة] [الطفل] [هل]</p> <p>[?] [Ant] f-[rDAEp] [AlTfl] [hl]</p> <p>[انت] [ف] [رضاعة] [طفل]</p> <p>[Ant] f-[rDAEp] [Tfl]</p>
171-Tr	<p>يستخدم المرهم لعلاج الجروح</p>

	<p>ystxdAm Almrhm lElAj AljrwH [المرهم] [استخدام] [علاج] [جرح] [Almrhm] [AstxdAm] [ElAj] [jrH] [مرهم] [عمل] [فوق] [جرح] [mrhm] [Eml] [fwq] [jrH]</p>
172-Tr	<p>استخدم المرهم على الحروق Astxdm Almrhm ElY AlHrwq [انت] [استخدام] [المرهم] [فوق] [الحرق] [كثير] [Ant] [AstxdAm] [Almrhm] [fwq] [AlHrq] [kvyr] [مرهم] [عمل] [فوق] [حرق] [mrhm] [Eml] [fwq] [Hrq]</p>
173-Tr	<p>الدهون سبب في تصلب الشرايين Aldhwn sbb fy tSlb Al\$Ayyn [تصلب] [الشرايين] [السبب] [الدهن] [tSlb] [Al\$Ayyn] [Alsbb] [Aldhn] [دهن] [سبب] [مرض] [شرايين] [تصلب] [dhn] [sbb] [mrD] [\$Ayyn] [tSlb]</p>
174-Tr	<p>الأكل السليم يقلل من ارتفاع ضغط الدم Al>kl Alslym yqll mn ArtfAE DgT Aldm [اكل] [جيد] [ضغط الدم] [ارتفاع] [لا] [Akl] [jyd] [DgT Aldm] [ArtfAE] [lA] [اكل] [تمام] [ضغط الدم] [ارتفاع] [لا] [Akl] [tmAm] [DgT Aldm] [ArtfAE] [lA]</p>
175-Tr	<p>ضع مرهم على الحرق DE mrhm ElY AlHrq [أنت] [فعمل] [مرهم] [على] [الحرق] [>nt] f-[Eml] [mrhm] [ElY] [AlHrq] [فعمل] [مرهم] [فوق] [حرق] f-[Eml] [mrhm] [fwq] [Hrq]</p>
176-Tr	<p>أظهرت الفحوصات سلامتك من السكتة القلبية >Zhrt AlfHwSA t slAmtk mn Alsktp Alqlbyp [أنت] [نتيجة] [فحص] [كثير] [سليم] [سكتة قلبية] [موجود] [لا] [>nt] [ntyjp] [fHS] [kvyr] [slym] [sktp qlbyp] [mwjwd] [lA] [انت] [فحص] [سليم] [موجود] [لا] [سكته] [قلبية] [Ant] [fHS] [slym] [mwjwd] [lA] [skth] [qlbyp]</p>
177-Tr	<p>تحتاج إلى الراحة حتى يزول الصداع tHtAj <lY AlrAHp HtY yzwl AlSdAE</p>

	<p>[انت] [لازم] [راحة] [حتى] [الصداع] [اتهي]</p> <p>[Ant] [lAzm] [rAHp] [HtY] [AlSdAE] [AnthY]</p> <p>[لازم] [راحة] [ثم] [صداع] [وقف]</p> <p>[lAzm] [rAHp] [vm] [SdAE] [wqf]</p>
178-Tr	<p>يتم علاج الحساسية بسرعة</p> <p>ytm ElAj AlHsAsyp bsrEp</p> <p>[حساسية] [علاج] [سرعة]</p> <p>[HsAsyp] [ElAj] [srEp]</p> <p>[حساسية] [علاج] [سرعة]</p> <p>[HsAsyp] [ElAj] [srEp]</p>
179-Tr	<p>ضع مقياس الحرارة في فمك</p> <p>DE mqyAs AlHrArp fy fmk</p> <p>[مقياس الحرارة] [فم] [عمل] [في] [انت] [فم]</p> <p>[mqyAs AlHrArp] f-[Eml] [fy] [Ant] [fm]</p> <p>[مقياس الحرارة] [فم] [عمل] [في] [الفم]</p> <p>[mqyAs AlHrArp] f-[Eml] [fy] [Alfm]</p>
180-Tr	<p>اعمل التحليل الطبي لمعرفة نوع الدودة</p> <p>AEml AltHlyl AlTby lmErfp nwE Aldwdp</p> <p>[أنت] [عمل] [تحليل الطبي] [السبب] [فمعرفة] [الدودة] [نوع]</p> <p>[>nt] [Eml] [tHlyl AlTby] [Alsbb] f-[mErfp] [Aldwdp] [nwE]</p> <p>[انت] [عمل] [تحليل الطبي] [فمعرفة] [دودة] [ايش] [نوع]</p> <p>[Ant] [Eml] [tHlyl AlTby] f-[mErfp] [dwdp] [Ay\$] [nwE]</p>
181-Tr	<p>يمكن سؤال الطبيب عن نوع المرمم</p> <p>ymkn s&Al AlTbyb En nwE Almrhm</p> <p>[سؤال] [الطبيب] [نوع] [ماذا]</p> <p>[s&Al] [AlTbyb] [nwE] [mA*A]</p> <p>[سؤال] [طبيب] [مرمم] [ايش] [نوع]</p> <p>[s&Al] [Tbyb] [mrhm] [Ay\$] [nwE]</p>
182-Tr	<p>يقوم الطبيب بتدريب المريض بعد العملية</p> <p>yqwm AlTyb btdryb AlmryD bEd AlEmlyp</p> <p>[الطبيب] [فمدريب] [مريض] [عملية] [بعد]</p> <p>[AlTbyb] f-[tdryb] [mryD] [Emlyp] [bEd]</p> <p>[الطبيب] [فمدريب] [المريض] [بعد] [العملية]</p> <p>[AlTbyb] f-[tdryb] [AlmryD] [bEd] [AlEmlyp]</p>
183-Tr	<p>يحتاج المريض إلى جراحة عاجلة</p> <p>yHtAj AlmryD <IY jrAHp EAjlp</p> <p>[لازم] [المريض] [عمل] [جراحة] [سرعه]</p> <p>[lAzm] [AlmryD] [Eml] [jrAHp] [srEh]</p>

	<p>[لازم] [مريض] [عملية] [سرعه] [lAzm] [mryD] [Emlyp] [srEh]</p>
184-Tr	<p>ما زالت الفحوصات في المختبر mA zAlt AlfHwSAf fy Almxtbr [الفحص] [كثير] [مازال] [المختبر] [AlfHS] [kvyr] [mAzAl] [Almxtbr] [انتظر] [فحص] [مازال] [مختبر] [AntZr] [fHS] [mAzAl] [mxtbr]</p>
185-Tr	<p>على مريض القلب سؤال الطبيب قبل ممارسة الرياضة ElY mryD Alqlb s&Al AlTbyb qbl mmArsp AlryADp [رياضة] [قبل] [لازم] [مريض] [القلب] [فـسؤال] [الطبيب] [ryADp] [qbl] [lAzm] [mryD] [Alqlb] f-[s&Al] [AlTbyb] [مثلا] [مرض] [قلب] [في] [لازم] [فـسؤال] [طبيب] [رياضة] [عادي] [او] [ممنوع] [mvlA] [mrD] [qlb] [fy] [lAzm] f-[s&Al] [Tbyb] [ryADp] [EAdy] [Aw] [mmnwE]</p>
186-Tr	<p>ستذهب مع الممرضة إلى غرفة الولادة st*hb mE AlmmrDp <lY grfp AlwlAdp [انت] [مع] [الممرضة] [فـذهاب] [غرفة] [الولادة] [Ant] [mE] [AlmmrDp] f-[*hAb] [grfp] [AlwlAdp] [ممرضة] [مع] [بعض] [الى] [غرفة] [ولادة] [mmrDp] [mE] [bED] [AlY] [grfp] [wlAdp]</p>
187-Tr	<p>بماذا تشعر؟ bmA*A t\$Er? [؟] [انت] [شعور] [ماذا] [?] [Ant] [\$Ewr] [mA*A] [أيش] [تشعر] [Ay\$] [t\$Er]</p>
188-Tr	<p>قال لي طبيب البطن بأن في بطني جرثومة qAl ly Tbyb AlbTn b>n fy bTny jrvwmp [طبيب] [البطن] [فـكلام] [جرثومة] [داخل] [انا] [بطن] [Tbyb] [AlbTn] f-[klAm] [jrvwmp] [dAxl] [AnA] [bTn] [طبيب] [فـكلام] [معدة] [في] [جرثومة] [Tbyb] f-[klAm] [mEdp] [fy] [jrvwmp]</p>
189-Tr	<p>لا تنام على ظهرك لتجنب الحرقان lA tnAm ElY Zhrk ltjnb AlHrqAn [انت] [حرقان] [وقف] [لازم] [نوم] [لا] [على] [الظهر] [Ant] [HrqAn] [wqf] [lAzm] [nwm] [lA] [ElY] [AlZhr] [ممنوع] [نوم] [على] [الظهر] [mmnwE] [nwm] [ElY] [AlZhr]</p>

190-Tr	<p>تعاني الحامل من فقر الدم tEAny AlHAml mn fqr Aldm [الحامل] [مصاب] [فقر] [الدم] [AlHAml] [mSAb] [fqr] [Aldm] [حامل] [في] [فقر] [دم] [HAml] [fy] [fqr] [dm]</p>
191-Tr	<p>لا تتناول الحامل الدواء بدون علم الطبيب lA ttnAwl AlHAml AldwA' bdwn Elm AlTbyb [اكل] [قبل] [علاج] [لازم] [حامل] [فـسؤال] [الطبيب] [Akl] [qbl] [ElAj] [lAzm] [HAml] f-[s&Al] [AlTbyb] [حامل] [ممنوع] [دواء] [من] [نفسه] [لازم] [فـسؤال] [طبيب] [HAml] [mmnwE] [dwA'] [mn] [nfsh] [lAzm] f-[s&Al] [Tbyb]</p>
192-Tr	<p>تطلب الإجازة المرضية عند الحاجة tTlb Al<jAzp AlmrDyp End AlHAjp [إجازة] [مريضة] [فقط] [وقت] [الضرورة] [<jAzp] [mryDp] [fqT] [wqt] [AlDrwrp] [إجازة] [مرضية] [وقت] [الضرورة] [AjAzp] [mrDyp] [wqt] [AlDrwrp]</p>
193-Tr	<p>يستخدم الجبس لعلاج كسر العظام ystxdm Aljbs lElAj ksr AlEZAm [الجبس] [استخدام] [علاج] [العظم] [كثير] [كسر] [Aljbs] [AstxdAm] [ElAj] [AlEZm] [kvyr] [ksr] [جبس] [فائدة] [ماذا] [علاج] [عظم] [مكسور] [jbs] [fAydp] [mA*A] [ElAj] [EZm] [mkswr]</p>
194-Tr	<p>التطعيم مهم للأطفال AltTEym mhm ll>TfAl [التطعيم] [مهم] [طفل] [كثير] [AltTEym] [mhm] [Tfl] [kvyr] [تطعيم] [مهم] [طفل] [tTEym] [mhm] [Tfl]</p>
195-Tr	<p>ستعطيك الممرضة حقنة مهدئة stETyk AlmmrDp Hqnp mhd}p [الممرضة] [فـمعمل] [انت] [أبرة] [مهدى] [AlmmrDp] f-[Eml] [Ant] [Abrp] [mhdY] [ممرضة] [فـعطاء] [لك] [أبرة] [مهدئة] [mmrDp] f-[ETA'] [lk] [Abrp] [mhd}p]</p>
196-Tr	<p>تجنب معالجة الكسر بدون استشارة الطبيب</p>

	<p>tjnb mEAljp Alksr bdwn Ast\$Arp AlTbyb</p> <p>[كسر] [علاج] [لازم] [كلام] [الطبيب]</p> <p>[ksr] [ElAj] [lAzm] [klAm] [AlTbyb]</p> <p>[ممنوع] [علاج] [كسر] [لازم] [طبيب]</p> <p>[mmnwE] [ElAj] [ksr] [lAzm] [Tbyb]</p>
197-Tr	<p>أحرص على نظافة الجرح</p> <p>AHrS EIY nZAfp AljrH</p> <p>[لازم] [جرح] [نظيف]</p> <p>[lAzm] [jrH] [nZyf]</p> <p>[لازم] [جرح] [نظيف] [انتبه]</p> <p>[lAzm] [jrH] [nZyf] [Antbh]</p>
198-Tr	<p>سيصف لك الطبيب علاج الأزمة القلبية</p> <p>sySf lk AlTbyb ElAj Al>zmp Alqlbyp</p> <p>[قريبا] [الطبيب] [فـ] [كتابة] [لك] [علاج] [الأزمة القلبية]</p> <p>[qrybA] [AlTbyb] f-[ktAbp] [lk] [ElAj] [Al>zmp Alqlbyp]</p> <p>[قريبا] [طبيب] [فـ] [كتابة] [دواء] [أزمة قلبية]</p> <p>[qrybA] [Tbyb] f-[ktAbp] [dwA'] [Azmp qlbyp]</p>
199-Tr	<p>ستخضع للتخدير أثناء العملية</p> <p>stxDE lltxdyr >vnA' AlEmlyp</p> <p>[أثناء] [العملية] [أنت] [في] [تخدير]</p> <p>[>vnA'] [AlEmlyp] [>nt] [fy] [txdyr]</p> <p>[أنت] [في] [تخدير] [وقت] [العملية]</p> <p>[Ant] [fy] [txdyr] [wqt] [AlEmlyp]</p>
200-Tr	<p>تكسر الدم مرض وراثي</p> <p>tksr Aldm mrD wrAvy</p> <p>[الدم] [كسر] [مرض] [وراثة]</p> <p>[Aldm] [ksr] [mrD] [wrAvp]</p> <p>[مرض] [كسر] [دم] [وراثة]</p> <p>[mrD] [ksr] [dm] [wrAvp]</p>
201-Tr	<p>لديك جرثومة في المعدة</p> <p>ldyk jrvwmp fy AlmEdp</p> <p>[أنت] [موجود] [جرثومة] [المعدة]</p> <p>[Ant] [mwjwd] [jrvwmp] [AlmEdp]</p> <p>[أنت] [في] [جرثومة] [معدة]</p> <p>[Ant] [fy] [jrvwmp] [mEdp]</p>
202-Tr	<p>أنت تعاني من التهاب البنكرياس</p> <p>>nt tEAny mn AlthAb AlbnkryAs</p>

	<p>[أنت] [مشكلة] [التهاب] [البنكرياس] [>nt] [m\$klp] [AlthAb] [AlbnkryAs] [انت] [في] [التهاب] [البنكرياس] [Ant] [fy] [AlthAb] [AlbnkryAs]</p>
203-Tr	<p>هل ممكن أن أحجز موعد مع طبيب الأطفال؟ hl mmkn >n >Hjz mwEd mE Tbyb Al>TfAl? [؟] [ممكن] [موعد] [طبيب] [الطفل] [هل] [?] [mmkn] [mwEd] [Tbyb] [AlTfl] [hl] [ممكن] [موعد] [طبيب] [طفل] [mmkn] [mwEd] [Tbyb] [Tfl]</p>
204-Tr	<p>اتصل بالطبيب إذا كان درجة حرارة الرضيع ٤٠ مئوية AtSl bAlTbyb <*A kAn drjp HrArp AlrDyE 40 m}wyp [رضيع] [درجة حرارة] [٤٠] [انت] [لازم] [اتصال] [الطبيب] [rDyE] [drjp HrArp] [40] [Ant] [lAzm] [AtSAI] [AlTbyb] [مثلا] [رضيع] [٤٠] [آ] [لازم] [اسعاف] [طبيب] [بسرعة] [mvIA] [rDyE] [o] [lAzm] [AsEAf] [Tbyb] [bsrEp]</p>
205-Tr	<p>يجب عليك عمل فحوصات في المختبر yjb Elyk Eml fHwSAf fy Almxtbr [لازم] [انت] [فعمل] [فحص] [كثير] [المختبر] [lAzm] [Ant] f-[Eml] [fHS] [kvyr] [Almxtbr] [لازم] [ففحص] [دم] [مختبر] [lAzm] f-[fHS] [dm] [mxtbr]</p>
206-Tr	<p>يجب أن تتعلم الأم كيف قياس درجة حرارة الطفل yjb >n ttElm Al>m kyf qyAs drjp HrArp AlTfl [لازم] [ام] [فاهم] [كيف] [قياس] [حرارة] [الطفل] [lAzm] [Am] [fAhm] [kyf] [qyAs] [HrArp] [AlTfl] [لازم] [ام] [فاهم] [كيف] [عمل] [قياس] [حرارة] [طفل] [lAzm] [Am] [fAhm] [kyf] [Eml] [qyAs] [HrArp] [Tfl]</p>
207-Tr	<p>تنفع بعض الأدوية لعلاج الإمساك عند الأطفال tnfE bED Al>dwyp lElAj Al<msAk End Al>TfAl [ممكن] [بعض] [علاج] [امسك] [وقف] [mmkn] [bED] [ElAj] [Amsk] [wqf] [ممكن] [دواء] [طفل] [سبب] [امساك] [وقف] [mmkn] [dwA'] [Tfl] [sbb] [AmsAk] [wqf]</p>
208-Tr	<p>هل اتيت من مستشفى آخر؟ hl Atyt mn mst\$FY —xr? [؟] [انت] [فوصول] [مستشفى] [اخر] [هل]</p>

	<p>[?] [Ant] f-[wSwl] [mst\$fy] [Axr] [hl] [انت] ف[وصول] [مستشفى] [آخر] [اين] [؟] [Ant] f-[wSwl] [mst\$fy] [Axr] [Ayn] [?]</p>
209-Tr	<p>لا تشتري أدوية الحرقان دون وصفة طبية lA t\$try >dwyp AlHrqAn dwn wSfp Tbyp [ممنوع] [شراء] [علاج] [الحرقان] [لازم] [طبيب] ف[أمر] [mmnwE] [\$rA'] [ElAj] [AlHrqAn] [lAzm] [Tbyb] f-[>mr] [دواء] [حرقان] [من] [نفسك] [ممنوع] [لازم] [طبيب] ف[أمر] [dwA'] [HrqAn] [mn] [nfsk] [mmnwE] [lAzm] [Tbyb] f-[>mr]</p>
210-Tr	<p>تحتاج الى علاج طبيعي tHtAj AlY ElAj TbyEy [انت] ف[ماجة] [علاج] [طبيعي] [Ant] f-[HAjp] [ElAj] [TbyEy] [لازم] [علاج] [طبيعي] [lAzm] [ElAj] [TbyEy]</p>
211-Tr	<p>يساعد العلاج الطبيعي في علاج الشلل النصفي ysAEd AlElAj AlTbyEy fy ElAj Al\$ll AlnSfy [العلاج] [الطبيعي] ف[مساعدة] [علاج] [شلل النصفي] [AlElAj] [AlTbyEy] f-[msAEdp] [ElAj] [\$ll AlnSfy] [علاج] [طبيعي] ف[مساعدة] [شلل النصفي] [ElAj] [TbyEy] f-[msAEdp] [\$ll AlnSfy]</p>
212-Tr	<p>يتم عمل تحليل البول للتحقق من عمل الكلى ytm Eml tHlyl Albwl lltHqq mn Eml AlklY [تحليل] [البول] [السبب] [الكلى] [عمل] [او] [لا] [tHlyl] [Albwl] [Alsbb] [AlklY] [Eml] [Aw] [lA] ف[فحص] [بول] [سبب] [معرفة] [كيف] [الكلى] f-[fHS] [bwl] [sbb] [mErfp] [kyf] [AlklY]</p>
213-Tr	<p>ما نوع التلقيح الذي أجرته؟ mA nwE AltqyH Al*y >jryth? [؟] [قبل] [انت] ف[معمل] [لقاح] [ما] [?] [qbl] [Ant] f-[Eml] [lqAH] [mA] [ما] [تطعيم] [انت] ف[معمل] [؟] [mA] [tTEym] [Ant] f-[Eml] [?]</p>
214-Tr	<p>تسبب الشلل الدماغي في إعاقة المريض tsbb Al\$ll AldmAgY fy <EAqp AlmryD [قبل] [الشلل الدماغي] [سبب] [إعاقة] [مريض] [qbl] [Al\$ll AldmAgY] [sbb] [<EAqp] [mryD]</p>

	<p>[قبل] [تشلل دماغي] [السبب] [اعاقه] [مريض]</p> <p>[qbl] [\$ll dmAgY] [Alsbb] [AEAQh] [mryD]</p>
215-Tr	<p>يتعالج المدمن من المخدرات</p> <p>ytEAlj Almdmn mn AlmxdrAt</p> <p>[الان] [المدمن] [ف] [علاج] [من] [المخدرات]</p> <p>[AlAn] [Almdmn] f-[ElAj] [mn] [AlmxdrAt]</p> <p>[الان] [مدمن] [في] [علاج] [من] [المخدرات]</p> <p>[AlAn] [mdmn] [fy] [ElAj] [mn] [AlmxdrAt]</p>
216-Tr	<p>قد يسبب العلاج صداع شديد</p> <p>qd ysbb AlElAj SdAE \$dyd</p> <p>[العلاج] [ممكن] [ف] [سبب] [صداع] [قوي]</p> <p>[AlElAj] [mmkn] f-[sbb] [SdAE] [qwy]</p> <p>[ممكن] [علاج] [لاحقا] [في] [صداع] [شديد]</p> <p>[mmkn] [ElAj] [lAHqA] [fy] [SdAE] [\$dyd]</p>
217-Tr	<p>تم تحويلك إلى قسم العظام</p> <p>tm tHwylk <IY qsm AlEZAm</p> <p>[انت] [في] [تحويل] [الى] [قسم] [العظم]</p> <p>[Ant] [fy] [tHwyl] [AlY] [qsm] [AlEZm]</p> <p>[انت] [في] [تحويل] [الى] [قسم] [العظم]</p> <p>[Ant] [fy] [tHwyl] [AlY] [qsm] [AlEZm]</p>
218-Tr	<p>هل تشعر بحمى؟</p> <p>hl t\$Er bHmY?</p> <p>[؟] [انت] [في] [حمى] [هل]</p> <p>[?] [Ant] [fy] [HmY] [hl]</p> <p>[في] [حمى] [؟]</p> <p>[fy] [HmY] [?]</p>
219-Tr	<p>يعاني الأطفال غالبا من الحساسية</p> <p>yEAny Al>TfAl gAlbA mn AlHsAsyp</p> <p>[الطفل] [ثلاثة] [ممكن] [مصاب] [كثير] [حساسية]</p> <p>[AlTfl] [vlAvp] [mmkn] [mSAb] [kvyr] [HsAsyp]</p> <p>[الطفل] [ثلاثة] [ممكن] [كثير] [حساسية]</p> <p>[AlTfl] [vlAvp] [mmkn] [ktyr] [HsAsyp]</p>
220-Tr	<p>اذهب إلى المختبر لعمل تحليل الدم</p> <p>A*hb <IY Almxtbr lEml tHlyl Aldm</p> <p>[أنت] [ف] [ذهاب] [المختبر] [السبب] [عمل] [تحليل الدم]</p> <p>[>nt] f-[*hAb] [Almxtbr] [Alsbb] [Eml] [tHlyl Aldm]</p> <p>[انت] [ف] [ذهاب] [الى] [المختبر] [عمل] [فحص دم]</p>

	[Ant] f-[*hAb] [AlY] [Almxtbr] [Eml] [fHS dm]
221-Tr	<p>الغرغرة مفيدة لعلاج التهاب الحلق</p> <p>Algrgrp mfydp lElAj AlthAb AlHlq</p> <p>[الغرغرة] [فائدة] [علاج] [التهاب] [الحلق]</p> <p>[Algrgrp] [fAyd] [ElAj] [AlthAb] [AlHlq]</p> <p>[غرغرة] [فائدة] [التهاب] [الحلق]</p> <p>[grgrp] [fAyd] [AlthAb] [AlHlq]</p>
222-Tr	<p>حليب الأم يساعد في الوقاية من الاسهال</p> <p>Hlyb Al>m ysAE d fy AlwqAyp mn AlAshAl</p> <p>[حليب] [ام] [ف] [مساعدته] [وقاية] [اسهال]</p> <p>[Hlyb] [Am] f-[msAE d] [wqAyp] [AshAl]</p> <p>[حليب] [ام] [ف] [مساعدة] [حماية] [اسهال]</p> <p>[Hlyb] [Am] f-[msAE d] [HmAyp] [AshAl]</p>
223-Tr	<p>تحتاج العين اليسرى إلى فحص النظر</p> <p>tHtAj AlEyn AlysrY <lY fHS AlnZr</p> <p>[العين] [اليسرى] [ف] [ماجة] [فحص النظر]</p> <p>[AlEyn] [AlysrY] f-[HAjp] [fHS AlnZr]</p> <p>[انت] [عين] [أيسر] [لازم] [فحص النظر]</p> <p>[Ant] [Eyn] [>ysr] [lAzm] [fHS AlnZr]</p>
224-Tr	<p>لايقاف نزيف الأنف يفضل أن يكون المصاب واقف</p> <p>l<yqAf nzyf Al>nf yfDl >n ykwn AlmSAb wAqf</p> <p>[لازم] [مصاب] [واقف] [السبب] [وقف] [نزيف] [الأنف]</p> <p>[lAzm] [mSAb] [wAqf] [Alsbb] [wqf] [nzyf] [AlAnf]</p> <p>[كيف] [وقف] [نزيف] [الأنف] [لازم] [مريض] [واقف]</p> <p>[kyf] [wqf] [nzyf] [AlAnf] [lAzm] [mryD] [wAqf]</p>
225-Tr	<p>التهاب المعدة قد يتطور إلى نزيف داخلي</p> <p>AlthAb AlmEdp qd ytTwr <lY nzyf dAxly</p> <p>[التهاب] [المعدة] [ممكن] [بدل] [نزيف] [داخل] [الجسم]</p> <p>[AlthAb] [AlmEdp] [mmkn] [bd] [nzyf] [dAxl] [Aljsm]</p> <p>[التهاب] [معدة] [بعدين] [بدل] [نزيف] [داخل]</p> <p>[AlthAb] [mEdp] [bEdyn] [bd] [nzyf] [dAxl]</p>
226-Tr	<p>الفيتامينات مفيدة لعلاج الزكام</p> <p>Alfy tAmynAt mfydp lElAj AlzkAm</p> <p>[فيتامين] [كثير] [فائدة] [سبب] [علاج] [زكام]</p> <p>[fy tAmyn] [kvyr] [fA}dp] [sbb] [ElAj] [zkAm]</p> <p>[فيتامين] [في] [فائدة] [علاج] [زكام]</p> <p>[fy tAmyn] [fy] [fAyd] [ElAj] [zkAm]</p>

227-Tr	<p>سيقوم طبيب البطن بإجراء فحص دم syqwm Tbyb AlbTn b<jrA' fHS dm [طبيب] [البطن] [فعمل] [فحص] [دم] [Tbyb] [AlbTn] f-[Eml] [fHS] [dm] [طبيب] [بطن] [فعمل] [فحص] [دم] [Tbyb] [bTn] f-[Eml] [fHS] [dm]</p>
228-Tr	<p>خذ قرص عند المساء x* qrS End AlmsA' [قرص] [واحد] [وقت] [المساء] [qrS] [wAHd] [wqt] [AlmsA'] [حبة] [الليل] [Hbp] [Allyl]</p>
229-Tr	<p>سيتم فك القفص الصدري أثناء العملية sytm fk AlqfS AlSdry >vnA' AlEmlyp [أثناء] [العملية] [ففتح] [القفص الصدري] [>vnA'] [AlEmlyp] f-[ftH] [AlqfS AlSdry] [القفص الصدري] [في] [فك] [وقت] [العملية] [AlqfS AlSdry] [fy] [fk] [wqt] [AlEmlyp]</p>
230-Tr	<p>هل تعاني من الصداع الشديد بصورة مستمرة؟ hl tEAny mn AlSdAE Al\$dyd bSwp mstmrp? [؟] [انت] [دائماً] [الم] [صداع] [قوي] [هل] [?] [Ant] [dA}mA] [Alm] [SdAE] [qwy] [hl] [؟] [انت] [صداع] [شديد] [مستمر] [?] [Ant] [SdAE] [\$dyd] [mstmr]</p>
231-Tr	<p>هل أجريت عملية جراحية من قبل؟ hl >jryt Emlyp jrAHyp mn qbl? [؟] [قبل] [انت] [عمل] [عملية] [جراحية] [هل] [?] [qbl] [Ant] [Eml] [Emlyp] [jrAHyp] [hl] [؟] [في] [زمان] [عمل] [عملية] [?] [fy] [zmAn] [Eml] [Emlyp]</p>
232-Tr	<p>لا تشرب الدواء على معدة فارغة lA t\$rb AldwA' ELY mEdp fArgp [ممنوع] [شرب] [دواء] [اكل] [موجود] [لا] [mmnwE] [\$rb] [dwA'] [Akl] [mwjwd] [lA] [ممنوع] [شرب] [دواء] [اكل] [موجود] [لا] [mmnwE] [\$rb] [dwA'] [Akl] [mwjwd] [lA]</p>
233-Tr	<p>هل هناك دهون ضارة ودهون مفيدة؟</p>

	<p>hl hnAk dhwn DArp wdhwn mfydp?</p> <p>[?] فـ[موجود] [هن] [جيد] [و] [دخن] [سيء] [هل]</p> <p>[?] f-[mwjwd] [hn] [jyd] [w] [dxn] [sy'] [hl]</p> <p>[?] [دهن] [كيف] [في] [مفيد] [و] [في] [سيء]</p> <p>[?] [dhn] [kyf] [fy] [mfyd] [w] [fy] [sy']</p>
234-Tr	<p>هل تعاني من تساقط الشعر؟</p> <p>hl tEAny mn tsAqT Al\$Er?</p> <p>[?] [انت] [مريض] [تساقط الشعر] [هل]</p> <p>[?] [Ant] [mryD] [tsAqT Al\$Er] [hl]</p> <p>[انت] [في] [تساقط الشعر] [؟]</p> <p>[Ant] [fy] [tsAqT Al\$Er] [?]</p>
235-Tr	<p>أخذت إبرة الضغط أمس</p> <p>>x*t <brp AlDgT >ms</p> <p>[أمس] [أنا] فـ[أخذ] [إبرة] [الضغط]</p> <p>[>ms] [>nA] f-[>x*] [<brp] [AlDgT]</p> <p>[امس] [انا] فـ[أخذ] [إبره] [الضغط]</p> <p>[Ams] [AnA] f-[Ax*] [Abrh] [AlDgT]</p>
236-Tr	<p>أشعر بآلم شديد في أسناني</p> <p>>\$Er b>lm \$dyd fy >snAny</p> <p>[انا] فـ[شعور] [آلم] [شديد] [اسنان]</p> <p>[AnA] f-[\$Ewr] [Alm] [\$dyd] [AsnAn]</p> <p>[انا] فـ[آلم] [كثير] [اسنان]</p> <p>[AnA] f-[Alm] [kvyr] [AsnAn]</p>
237-Tr	<p>هل طعمت ابنك ضد شلل الأطفال؟</p> <p>hl TEmt Abnk Dd \$ll Al>TfAl?</p> <p>[?] [قبل] [أنت] [ابن] فـ[تطعيم] [شلل] [الطفل]</p> <p>[?] [qbl] [>nt] [Abn] f-[tTEym] [\$ll] [AlTfAl]</p> <p>[انت] [في] فـ[تطعيم] [حقك] [طفل] [من] [شلل] [الطفل] [؟]</p> <p>[Ant] [fy] f-[tTEym] [Hqk] [TfAl] [mn] [\$ll] [AlTfAl] [?]</p>
238-Tr	<p>تضر مشروبات الطاقة الجسم</p> <p>tDr m\$rwbAt AlTAqp Aljsm</p> <p>[شراب] [الطاقة] [كثير] [سيء] [الجسم]</p> <p>[\$rAb] [AlTAqp] [kvyr] [sy'] [Aljsm]</p> <p>[شراب] [طاقة] [سيء] [للجسم]</p> <p>[\$rAb] [TAqp] [sy'] [lljsm]</p>
239-Tr	<p>قد يتسبب العمل مع الأشعة السينية في سرطان الجلد</p> <p>qd ytsbb AlEml mE Al>\$Ep Alsynyp fy srTAn Aljld</p>

	<p>[ممكن] [سرطان] [الجلد] [السبب] [عمل] [مع] [أشعة السينية]</p> <p>[mmkn] [srTAn] [Aljld] [Alsbb] [Eml] [mE] [A\$Ep Alsynyp]</p> <p>[سبب] [شغل] [مع] [أشعة سينية] [ممكن] [لاحقا] [في] [سرطان] [جلد]</p> <p>[sbb] [\$gl] [mE] [A\$Ep synyp] [mmkn] [lAHqA] [fy] [srTAn] [jld]</p>
240-Tr	<p>هل تعرف موقع الصيدلية؟</p> <p>hl tErf mwqE AlSydlyp?</p> <p>[?] [أنت] [ف] [معرفة] [مكان] [الصيدلية] [هل]</p> <p>[?] [>nt] f-[mErfp] [mkAn] [AlSydlyp] [hl]</p> <p>[أنت] [ف] [معرفة] [اين] [مكان] [صيدلية] [؟]</p> <p>[Ant] f-[mErfp] [Ayn] [mkAn] [Sydlyp] [?]</p>
241-Tr	<p>يتسبب البرد في الزكام</p> <p>ytsbb Albrd fy AlzkAm</p> <p>[الزكام] [السبب] [البرد]</p> <p>[AlzkAm] [Alsbb] [Albrd]</p> <p>[زكام] [سبب] [برد]</p> <p>[zkAm] [sbb] [brd]</p>
242-Tr	<p>أريد تحويلي إلى مستشفى آخر</p> <p>>ryd tHwyly <lY mst\$fY —xr</p> <p>[أنا] [ف] [ماجة] [تحويل] [مستشفى] [آخر]</p> <p>[AnA] f-[HAjp] [tHwyl] [mst\$fY] [Axr]</p> <p>[أنا] [ف] [ماجة] [تحويل] [مستشفى] [آخر]</p> <p>[AnA] f-[HAjp] [tHwyl] [mst\$fY] [Axr]</p>
243-Tr	<p>تجنب الأغذية المسببة للإسهال</p> <p>tjnb Al>g*yp Almsbbp ll<shAl</p> <p>[أنت] [لازم] [اترك] [اكل] [سبب] [إسهال]</p> <p>[Ant] [lAzm] [Atrk] [Akl] [sbb] [AshAl]</p> <p>[ممنوع] [اكل] [سبب] [إسهال]</p> <p>[mmnwE] [Akl] [sbb] [AshAl]</p>
244-Tr	<p>نصحي الطبيب برياضة المشي</p> <p>nSHny AlTbyb bryADp Alm\$y</p> <p>[الطبيب] [ف] [كلام] [رياضة] [المشي] [جيد]</p> <p>[AlTbyb] f-[klAm] [ryADp] [Alm\$y] [jyd]</p> <p>[طبيب] [ف] [امر] [لازم] [مشي] [رياضة]</p> <p>[Tbyb] f-[Amr] [lAzm] [m\$y] [ryADp]</p>
245-Tr	<p>أظهرت الفحوصات أن الكبد سليم</p> <p>>Zhrt AlfHwSAAt >n Alkbd slym</p> <p>[فحص] [كثير] [الكبد] [نتيجة] [سليم]</p>

	<p>[fHS] [kvyr] [Alkbd] [ntyjp] [slym]</p> <p>[فحص] [كبد] [سليم]</p> <p>[fHS] [kbd] [slym]</p>
246-Tr	<p>هل تم تحويلك من مستشفى آخر؟</p> <p>hl tm tHwylk mn mst\$fY —xr?</p> <p>[؟] [انت] [ف] [تحويل] [مستشفى] [آخر] [هل]</p> <p>[?] [Ant] f-[tHwyl] [mst\$fY] [Axr] [hl]</p> <p>[انت] [في] [ف] [تحويل] [من] [مستشفى] [آخر]</p> <p>[Ant] [fy] f-[tHwyl] [mn] [mst\$fY] [Axr]</p>
247-Tr	<p>يتألف الجهاز العصبي من مجموعة أنسجة</p> <p>yt>lf AljhAz AlESby mn mjmwEp >nsjp</p> <p>[الجهاز العصبي] [يتكون] [من] [أنسجة] [كثير]</p> <p>[AljhAz AlESby] [ytkwn] [mn] [>nsjp] [kvyr]</p> <p>[الجهاز العصبي] [يتكون] [من] [مجموعة] [أنسجة]</p> <p>[AljhAz AlESby] [ytkwn] [mn] [mjmwEp] [Ansjp]</p>
248-Tr	<p>حالتك تحتاج إجازة مرضية</p> <p>HAltK tHtAj <jAzp mrDyp</p> <p>[انت] [لازم] [إجازة] [مرضية]</p> <p>[Ant] [lAzm] [<jAzp] [mrDyp]</p> <p>[انت] [لازم] [إجازة] [مرضية]</p> <p>[Ant] [lAzm] [AjAzp] [mrDyp]</p>
249-Tr	<p>تناول الأغذية الملوثة يؤدي إلى التهاب الكبد</p> <p>tnAwl Al>g*yp Almlwvp y&dy <lY AlthAb Alkbdy</p> <p>[اكل] [وسخ] [ممكن] [التهاب] [كبد]</p> <p>[Akl] [wsx] [mmkn] [AlthAb] [kbd]</p> <p>[اكل] [وسخ] [بعد] [في] [التهاب] [كبد]</p> <p>[Akl] [wsx] [bEd] [fy] [AlthAb] [kbd]</p>
250-Tr	<p>كبار السن أكثر عرضة للكسور</p> <p>kbAr Alsn >kvr ErDp llkswr</p> <p>[العجوز] [كثير] [كسر] [سريع]</p> <p>[AlEjwz] [kvyr] [ksr] [sryE]</p> <p>[عجوز] [عظم] [مكسور] [بسرعة]</p> <p>[Ejwz] [EZm] [mkswr] [bsrEp]</p>
251-Tr	<p>تتسبب حوادث السيارة بإعاقة دائمة</p> <p>ttsbb HwAdv AlsyArp b<EAqp dA}mp</p> <p>[حادث] [كثير] [السيارة] [ممكن] [إعاقة] [دائم]</p> <p>[HAdv] [kvyr] [AlsyArp] [mmkn] [<EAqp] [dA}m]</p>

	<p>[حادث] [سيارة] [مسئول] [إعاقة] [دائم] [HAdv] [syArp] [ms}wl] [<EAqp] [dA}m]</p>
252-Tr	<p>ابدأ صباحك بالتمارين الرياضية Abd>SbAHk bAltmAryn AlryADyp [فبداية] [صباح] [عمل] [رياضة] f-[bdAyp] [SbAH] [Eml] [ryADp] [فبداية] [صباح] [عمل] [رياضة] f-[bdAyp] [SbAH] [Eml] [ryADp]</p>
253-Tr	<p>قد تشعر بالتعب مثل الدوخة qd t\$Er bAltEb mvl Aldwxp [انت] [ممکن] [تعب] [و] [دوخة] [Ant] [mmkn] [tEb] [w] [dwxp] [ممکن] [في] [تعب] [و] [دوخة] [mmkn] [fy] [tEb] [w] [dwxp]</p>
254-Tr	<p>يوصي الأطباء بتقليل استهلاك السكر ywSy Al>TbA' btqlyl AsthlAk Alskr [الطبيب] [ثلاثة] [فإمر] [لازم] [سكر] [قليل] [AlTbyb] [vlAvp] f-[Amr] [lAzm] [skr] [qlyl] [طبيب] [فإمر] [لازم] [سكر] [ناقص] [Tbyb] f-[Amr] [lAzm] [skr] [nAqS]</p>
255-Tr	<p>اشعر بحمى شديدة A\$Er bHmY \$dydp [أنا] [في] [حمى] [قوي] [AnA] [fy] [HmY] [qwy] [في] [حمى] [شديد] [fy] [HmY] [\$dyd]</p>
256-Tr	<p>يمنع دخول الأكل إلى غرفة العمليات ymnE dxwl Al>kl <lY grfp AlEmlyAt [ممنوع] [أكل] [داخل] [غرفة] [عملية] [mmnwE] [Akl] [dAxl] [grfp] [Emlyp] [ممنوع] [أكل] [داخل] [غرفة] [عملية] [mmnwE] [Akl] [dAxl] [grfp] [Emlyp]</p>
257-Tr	<p>يقوم الطبيب بالتأكد من أن الجرح خال من الأوساخ yqwm AlTbyb bAlt>kd mn >n AljrH xAl mn Al>wsAx [الطبيب] [عمل] [الجرح] [أكيد] [وسخ] [موجود] [لا] [AlTbyb] [Eml] [AljrH] [Akyd] [wsx] [mwjwd] [lA] [طبيب] [مسئول] [معرفة] [جرح] [نظيف] [اي] [وسخ]</p>

	[Tbyb] [ms}wl] [mErfp] [jrH] [nZyf] [Ay] [wsx]
258-Tr	<p>تنتقل البكتيريا بالعدوى</p> <p>tntql AlbktyryA bAlEdwY</p> <p>[البكتيريا] [فحركة] [العدوى]</p> <p>[AlbktyryA] f-[Hrkp] [AlEdwY]</p> <p>[بكتيريا] [في] [عدوى]</p> <p>[bktyryA] [fy] [EdwY]</p>
259-Tr	<p>أشعر بألم في الرئتين</p> <p>>\$Er b>lm fy Alr}tyn</p> <p>[الان] [أنا] [فشعور] [ألم] [الرئتين]</p> <p>[AlAn] [>nA] f-[\$Ewr] [>lm] [Alr}tyn]</p> <p>[أنا] [في] [الم] [رئتان]</p> <p>[AnA] [fy] [Alm] [r}tAn]</p>
260-Tr	<p>السبب الرئيسي لجرثومة المعدة هو عدم النظافة</p> <p>Alsbb Alr}sy ljrwwmp AlmEdp hw Edm AlnZAfp</p> <p>[سبب] [جرثومة] [المعدة] [نظافة] [يوجد] [لا]</p> <p>[sbb] [jrwwmp] [AlmEdp] [nZAfp] [ywj] [lA]</p> <p>[سبب] [جرثومة] [المعدة] [نظافة] [يوجد] [لا]</p> <p>[sbb] [jrwwmp] [AlmEdp] [nZAfp] [ywj] [lA]</p>
261-Tr	<p>يتأثر الجلد بالحروق</p> <p>yt>vr Aljld bAlHrwq</p> <p>[الجلد] [فتاثير] [الحرق] [كثير]</p> <p>[Aljld] f-[tAvyr] [AlHrq] [kvyr]</p> <p>[الجلد] [فتاثير] [حرق] [كثير]</p> <p>[Aljld] f-[tAvyr] [Hrq] [kvyr]</p>
262-Tr	<p>أشعر بورم في الظهر</p> <p>A\$Er bwrn fy AlZhr</p> <p>[أنا] [في] [ورم] [الظهر]</p> <p>[AnA] [fy] [wrn] [AlZhr]</p> <p>[أنا] [في] [ورم] [ظهر]</p> <p>[AnA] [fy] [wrn] [Zhr]</p>
263-Tr	<p>المريض يحتاج الأوكسجين</p> <p>AlmryD yHtAj Al>wksjyn</p> <p>[المريض] [فماجة] [اكسجين]</p> <p>[AlmryD] f-[HAjp] [Aksjyn]</p> <p>[هذا] [لازم] [فعمل] [اكسجين]</p> <p>[h*A] [lAzm] f-[Eml] [Aksjyn]</p>

264-Tr	<p>سنجري عملية لاستئصال الورم snjry Emlyp lAst}SAI Alwrm [نحن] [ف]عمل [عملية] [إزالة] [الورم] [nHn] f-[Eml] [Emlyp] [<zAlp] [Alwrm] [ورم] [لازم] [عملية] [wrm] [lAzm] [Emlyp]</p>
265-Tr	<p>يجب عمل الكمادات الباردة حتى تزول الحمى yjb Eml AlkmAdAt AlbArdp HtY tzwl AlHmY [لازم] [ف]استخدام [كمادة] [كثير] [حتى] [حمى] [اتهي] [lAzm] f-[AstxdAm] [kmAdp] [kvyr] [HtY] [HmY] [AnthY] [لازم] [مستمر] [كمادة] [باردة] [حتى] [حمى] [اتهي] [lAzm] [mstmr] [kmAdp] [bArdp] [HtY] [HmY] [AnthY]</p>
266-Tr	<p>وزن الطفل ء كيلوجرام wzn AlTfl 4 kylwjrAm [الطفل] [وزن] [ء] [كيلوجرام] [AlTfl] [wzn] [4] [kylwjrAm] [الطفل] [وزن] [ء] [كيلوجرام] [AlTfl] [wzn] [4] [kylwjrAm]</p>
267-Tr	<p>هل تشعر بحكة في الجرح؟ hl t\$Er bHkp fy AljrH? [؟] [الان] [أنت] [ف]شعور [حكة] [في] [الجرح] [هل] [?] [AlAn] [>nt] f-[\$Ewr] [Hkp] [fy] [AljrH] [hl] [أنت] [في] [إحساس] [حكه] [؟] [Ant] [fy] [<HsAs] [Hkh] [?]</p>
268-Tr	<p>يفحص طبيب العيون نظرك yfHS Tbyb AlEywn nZrk [الان] [طبيب العيون] [ف]فحص [أنت] [عيون] [AlAn] [Tbyb AlEywn] f-[fHS] [Ant] [Eywn] [الان] [طبيب العيون] [ف]عمل [فحص] [أنت] [عيون] [AlAn] [Tbyb AlEywn] f-[Eml] [fHS] [Ant] [Eywn]</p>
269-Tr	<p>ما اسمك؟ mA Asmk? [؟] [أنت] [اسم] [ماذا] [?] [Ant] [Asm] [mA*A] [الاسم] [AlAsm]</p>
270-Tr	<p>الدواء مهم للمصابين بالورم</p>

	<p>AldwA' mhm llmSAbyn bAlwrm [العلاج] [مهم] [مريض] [كثير] [ورم] [AlElA] [mhm] [mryD] [kvyr] [wrm] [دواء] [لازم] [لمريض] [الورم] [dwA'] [lAzm] [lmryD] [Alwrm]</p>
271-Tr	<p>سيقوم طبيب العيون بقياس نظري syqwm Tbyb AlEywn bqyAs nZry [طبيب] [العيون] [فعمل] [قياس] [انا] [النظر] [Tbyb] [AlEywn] f-[Eml] [qyAs] [AnA] [AlnZr] [طبيب] [فعمل] [قياس] [بصر] [انا] [Tbyb] f-[Eml] [qyAs] [bSr] [AnA]</p>
272-Tr	<p>قد تحس بحساسية في أسنانك بعد عملية التبييض qd tHs bHsAsyp fy >snAnk bEd Emlyp AltbyyD [ممكن] [اسنان] [ايض] [بعد] [في] [حساسية] [mmkn] [AsnAn] [AbyD] [bEd] [fy] [HsAsyp] [ممكن] [بعد] [اسنان] [ايض] [في] [حساسية] [mmkn] [bEd] [AsnAn] [AbyD] [fy] [HsAsyp]</p>
273-Tr	<p>أنت حامل في الشهر السادس >nt HAml fy Al\$hr AlsAds [انت] [حامل] [الشهر] [السادس] [Ant] [HAml] [Al\$hr] [AlsAds] [انت] [في] [حامل] [شهر] [كم] [السادس] [Ant] [fy] [HAml] [\$hr] [km] [AlsAds]</p>
274-Tr	<p>سيؤثر جهازك التنفسي بتلوث الهواء syt>vr jhAzk Altnfsy btlwv Alhwa' [قريبا] [انت] [الجهاز التنفسي] [فثاثير] [سبب] [تلوث] [هواء] [qrybA] [>nt] [AljhAz Altnfsy] f-[tAvyr] [sbb] [tlwv] [hwa'] [قريبا] [انت] [الجهاز التنفسي] [في] [مشكلة] [تلوث] [هواء] [qrybA] [Ant] [AljhAz Altnfsy] [fy] [m\$klp] [tlwv] [hwa']</p>
275-Tr	<p>الماء البارد مفيدة للتخلص من تورم العين AlmA' AlbArd mfydp lltxlS mn twrm AlEyn [ماء] [باردة] [ففايدة] [ورم] [عين] [mA'] [bArdp] f-[fAydp] [wrm] [Eyn] [ماء] [باردة] [ففايدة] [ورم] [عين] [mA'] [bArdp] f-[fAydp] [wrm] [Eyn]</p>
276-Tr	<p>التدخل الجراحي أصبح ضرورياً Altdxl AljraHy >SbH DrwryA</p>

	<p>[لازم] [عمل] [جراحة] [lAzm] [Eml] [jrAHp] [لازم] [عملية] [lAzm] [Emlyp]</p>
277-Tr	<p>من الطبيعي أن تعاني الحامل من الصداع mn AlTbyEy >n tEAny AlHAml mn AlSdAE [ممكن] [الحامل] [في] [الم] [صداع] [mmkn] [AlHAml] [fy] [Alm] [SdAE] [حامل] [ممكن] [في] [صداع] [HAml] [mmkn] [fy] [SdAE]</p>
278-Tr	<p>الشهيق والزفير من عمليات الجهاز التنفسي Al\$hyq wAlzfyr mn EmlyAt AljhAz Altnfsy [الجهاز التنفسي] [عمل] [الشهيق والزفير] [AljhAz Altnfsy] [Eml] [Al\$hyq wAlzfyr] [التنفس] [في] [الشهيق والزفير] [Altnfs] [fy] [Al\$hyq wAlzfyr]</p>
279-Tr	<p>هضم الطعام أحد وظائف الجهاز الهضمي hDm AlTEAm >Hd wZA}f AljhAz AlhDmy [هضم] [الطعام] [عمل] [الجهاز الهضمي] [hDm] [AlTEAm] [Eml] [AljhAz AlhDmy] [عمل] [الجهاز الهضمي] [هضم] [الاكل] [Eml] [AljhAz AlhDmy] [hDm] [AlAkl]</p>
280-Tr	<p>العلاج الطبيعي مهم للشلل AlElAj AlTbyEy mhm ll\$ll [العلاج] [الطبيعي] [مهم] [علاج] [الشلل] [AlElAj] [AlTbyEy] [mhm] [ElAj] [Al\$ll] [لازم] [علاج] [طبيعي] [لمرض] [الشلل] [lAzm] [ElAj] [TbyEy] [lmrD] [Al\$ll]</p>
281-Tr	<p>سينتشر الألم في الجهاز العصبي قريباً synt\$r Al>lm fy AljhAz AlESby qrybA [قريباً] [ألم] [فانتشار] [في] [الجهاز العصبي] [qrybA] [>lm] f-[Ant\$Ar] [fy] [AljhAz AlESby] [قريباً] [ألم] [فانتشار] [الجهاز العصبي] [qrybA] [Alm] f-[Ant\$Ar] [AljhAz AlESby]</p>
282-Tr	<p>تستخدم المضادات الحيوية مع التطعيم tstxdm AlmDAdAt AlHywyp mE AltTEym [فاستخدام] [مضاد حيوي] [كثير] [مع] [التطعيم]</p>

	<p>f-[AstxdAm] [mDAd Hywy] [kvyr] [mE] [AltTEym] [مضاد حيوي] [ممکن] ف[استخدام] [مع] [التطعيم] [عادي] [mDAd Hywy] [mmkn] f-[AstxdAm] [mE] [AltTEym] [EAdy]</p>
283-Tr	<p>احضر في الصباح لإجراء التحليل AHDr fy AlSbAH l<jrA' AltHlyl [الصباح] [انت] [حضور] [السبب] [عمل] [تحليل] [AlSbAH] [Ant] [HDwr] [Alsbb] [Eml] [tHlyl] [حضور] [صباح] [سبب] [عمل] [فحص] [HDwr] [SbAH] [sbb] [Eml] [fHS]</p>
284-Tr	<p>من اعراض الحمل الشعور بالغثيان mn AErAD AlHml Al\$Ewr bAlgvyAn [ممکن] [حمل] [سبب] [غثيان] [mmkn] [Hml] [sbb] [gvyAn] [سبب] [حمل] [في] [غثيان] [sbb] [Hml] [fy] [gvyAn]</p>
285-Tr	<p>اطباء العظام ينصحون بالعلاج الطبيعي ATbA' AlEZAm ynSHwn bAlElAj AlTbyEy [طبيب] [عظم] ف[كلام] [علاج] [طبيعي] [جيد] [Tbyb] [EZm] f-[klAm] [ElAj] [TbyEy] [jyd] [طبيب] [عظم] ف[كلام] [لازم] [علاج] [طبيعي] [Tbyb] [EZm] f-[klAm] [lAzm] [ElAj] [TbyEy]</p>
286-Tr	<p>اهتم بنظافة الجرح Ahtm bnZAfp AljrH [لازم] [انت] [اهتمام] [نظافة] [الجرح] [lAzm] [Ant] [AhtmAm] [nZAfp] [AljrH] [لازم] [جرح] [نظيف] [انتبه] [lAzm] [jrH] [nZyf] [Antbh]</p>
287-Tr	<p>الألياف تساعد على حل مشكلة الإمساك Al>lyAf tsAEd ElY Hl m\$klp Al<msAk [الالياف] ف[مساعدة] [علاج] [امساك] [AlAlyAf] f-[msAEdp] [ElAj] [AmsAk] [الياف] ف[مساعدة] [امساك] [يوجد] [لا] [AlyAf] f-[msAEdp] [AmsAk] [ywj] [lA]</p>
288-Tr	<p>يصاب كبار السن غالباً بالإعاقة ySAb kbAr Alsn gAlbA bAl<EAqp [كبير] [عمر] [غالباً] ف[مصاب] [إعاقة] [kbyr] [Emr] [gAlbA] f-[mSAb] [<EAqp] [عجوز] [ممکن] [إعاقة]</p>

	[Ejwz] [mmkn] [AEAqh]
289-Tr	<p>العلاج الطبيعي مهم لعلاج الإعاقة</p> <p>AlElAj AlTbyEy mhm lElAj Al<EAqp</p> <p>[العلاج] [الطبيعي] [مهم] [علاج] [إعاقة]</p> <p>[AlElAj] [AlTbyEy] [mhm] [ElAj] [<EAqp]</p> <p>[العلاج] [الطبيعي] [مهم] [علاج] [الاعاقه]</p> <p>[AlElAj] [AlTbyEy] [mhm] [ElAj] [AlAEAqh]</p>
290-Tr	<p>كم مرات حملت من قبل؟</p> <p>km mrAt Hmlt mn qbl?</p> <p>[؟] [قبل] [حمل] [عدد] [كم]</p> <p>[?] [qbl] [Hml] [Edd] [km]</p> <p>[انت] [زمان] [حامل] [كم]</p> <p>[Ant] [zmAn] [HAml] [km]</p>
291-Tr	<p>ما الذي يؤلمك؟</p> <p>mA Al*y y&lmk?</p> <p>[؟] [انت] [الم] [ماذا]</p> <p>[?] [Ant] [Alm] [mA*A]</p> <p>[اين] [الم]</p> <p>[Ayn] [Alm]</p>
292-Tr	<p>يحتاج المريض إلى إجراء أشعة ليزر اليوم</p> <p>yHtAj AlmryD <IY <jrA' >\$Ep lyzr Alywm</p> <p>[اليوم] [المريض] [لازم] [عمل] [أشعة ليزر]</p> <p>[Alywm] [AlmryD] [lAzm] [Eml] [>\$Ep lyzr]</p> <p>[مريض] [لازم] [عمل] [أشعة ليزر] [اليوم]</p> <p>[mryD] [lAzm] [Eml] [>\$Ep lyzr] [Alywm]</p>
293-Tr	<p>نتائج التحليل الطبي سليمة</p> <p>ntA}j AltHlyl AlTby slymp</p> <p>[نتيجة] [كثير] [التحليل الطبي] [سليم]</p> <p>[ntyjp] [kvyr] [AltHlyl AlTby] [slym]</p> <p>[فحص] [طبي] [انت] [سليم]</p> <p>[fHS] [Tby] [Ant] [slym]</p>
294-Tr	<p>يجب الحفاظ على نظافة الأسنان</p> <p>yjb AlHfAZ ElY nZAfp Al>snAn</p> <p>[لازم] [اسنان] [نظيفة] [دائماً]</p> <p>[lAzm] [AsnAn] [nZyfp] [dA}mA]</p> <p>[لازم] [انتبه] [اسنان] [نظيف]</p> <p>[lAzm] [Antbh] [AsnAn] [nZyf]</p>

295-Tr	<p>يجب فتح ملف أولاً yjb ftH mlf >wIA</p> <p>[لازم] [أول] [فتح] [ملف] [lAzm] [>wI] f-[ftH] [mlf]</p> <p>[لازم] [أول] [فمعمل] [ملف] [هنا] [lAzm] [AwI] f-[Eml] [mlf] [hnA]</p>
296-Tr	<p>كيف يمر الهواء إلى الجهاز التنفسي؟ kyf ymr AlhwA' <IY AljhAz Altnfsy?</p> <p>[؟] [هواء] [فدخول] [إلى] [الجهاز التنفسي] [كيف] [?] [hwA'] f-[dxwl] [<IY] [AljhAz Altnfsy] [kyf]</p> <p>[كيف] [هواء] [فدخول] [الجهاز التنفسي] [؟] [kyf] [hwA'] f-[dxwl] [AljhAz Altnfsy] [?]</p>
297-Tr	<p>يوجد فيتامين د على شكل نقاط ywj d fytAmyn d ElY \$kl nqAT</p> <p>[فيتامين] [د] [موجود] [قطرة] [fytAmyn] [d] [mwjwd] [qTrp]</p> <p>[في] [قطرة] [فيتامين] [د] [fy] [qTrp] [fytAmyn] [d]</p>
298-Tr	<p>يتم علم قياس ضغط الدم لكل من يراجع العيادة ytm Elm qyAs DgT Aldm lkl mn yrAjE AlEyAdp</p> <p>[أي] [شخص] [وصول] [العيادة] [في] [عمل] [قياس الضغط] [>y] [\$xS] [wSwI] [AlEyAdp] [fy] [Eml] [qyAs AlDgT]</p> <p>[اي] [واحد] [يروح] [عيادة] [في] [عمل] [قياس ضغط] [Ay] [wAHd] [yrwH] [EyAdp] [fy] [Eml] [qyAs DgT]</p>
299-Tr	<p>التهاب البلعوم من الأمراض المنتشرة AlthAb AlblEwm mn Al>mrAD Almnt\$rp</p> <p>[التهاب] [البلعوم] [من] [مرض] [كثير] [انتشار] [AlthAb] [AlblEwm] [mn] [mrD] [kvyr] [Ant\$Ar]</p> <p>[التهاب] [البلعوم] [انتشار] [كثير] [AlthAb] [AlblEwm] [Ant\$Ar] [kvyr]</p>
300-Tr	<p>تساعد الإسعافات الأولية في إنقاذ المصاب tsAE d Al<sEAfAt Al>wlyp fy <nqA* AlmSAb</p> <p>[الاسعافات الأولية] [فمساعدة] [إنقاذ] [مريض] [AlAsEAfAt AlAwlyp] f-[msAE d] [AnqA*] [mryD]</p> <p>[الاسعافات الأولية] [فمساعدة] [إنقاذ] [مريض] [AlAsEAfAt AlAwlyp] f-[msAE d] [AnqA*] [mryD]</p>

301-Tr	<p>قام طبيب الأسنان بتنظيف أسناني</p> <p>qAm Tbyb Al>snAn btnZyf >snAny</p> <p>[قبل] [طبيب] [الأسنان] فـ[عمل] [تنظيف] [أسنان]</p> <p>[qbl] [Tbyb] [AlAsnAn] f-[Eml] [tnZyf] [AsnAn]</p> <p>[طبيب] [تنظيف] [أسنان]</p> <p>[Tbyb] [tnZyf] [AsnAn]</p>
302-Tr	<p>يجب إعطاء الطفل شراب للمعدة</p> <p>yjb <ETA' AlTfl \$rAb llmEdp</p> <p>[لازم] [الطفل] [شراب] [السبب] [المعدة]</p> <p>[lAzm] [AlTfl] [\$rAb] [Alsb] [AlmEdp]</p> <p>[طفل] [لازم] [شراب] [المعدة]</p> <p>[Tfl] [lAzm] [\$rAb] [AlmEdp]</p>
303-Tr	<p>هناك عدة أنواع من الحساسية</p> <p>hnAk Edp >nwAE mn AlHsAsyp</p> <p>[حساسية] [موجود] [نوع] [كثير]</p> <p>[HsAsyp] [mwjwd] [nwE] [kvyr]</p> <p>[حساسية] [أنواع] [مختلف]</p> <p>[HsAsyp] [AnwAE] [mxtlf]</p>
304-Tr	<p>تم إرسال الفحص إلى المختبر</p> <p>tm <rsAl AlfHS <lY Almxtbr</p> <p>[قبل] [الفحص] فـ[إرسال] [مختبر]</p> <p>[qbl] [AlfHS] f-[ArsAl] [mxtbr]</p> <p>[انت] [فحص] فـ[أخذ] [مختبر]</p> <p>[Ant] [fHS] f-[Ax*] [mxtbr]</p>
305-Tr	<p>هل يوجد دواء للبكتيريا؟</p> <p>hl ywjd dwA' llbktyryA?</p> <p>[؟] فـ[موجود] [علاج] [البكتيريا] [هل]</p> <p>[?] f-[mwjwd] [ElAj] [AlbktyryA] [hl]</p> <p>[في] [دواء] [البكتيريا] [؟]</p> <p>[fy] [dwA'] [>lbktbryA] [?]</p>
306-Tr	<p>أي إذن تؤلمك؟</p> <p>>y <*n t&lmk?</p> <p>[؟] [انت] فـ[الم] [اذن] [هنا] [ام] [هنا]</p> <p>[?] [Ant] f-[Alm] [A*n] [hnA] [Am] [hnA]</p> <p>[اين] [الم] [هنا] [لم] [هنا]</p> <p>[Ayn] [Alm] [hnA] [lm] [hnA]</p>

307-Tr	<p>هل أنت أعزب؟ hl >nt >Ezb? [؟] [عازب] [انت] [هل] [?] [EAzb] [Ant] [hl] [انت] [عازب] [Ant] [EAzb]</p>
308-Tr	<p>زيادة الأكل تسبب حرقان المعدة zyAdp Al>kl tsbb HrqAn AlmEdp [حرقان المعدة] [سبب] [اكل] [كثير] [HrqAn AlmEdp] [sbb] [Akl] [kvyr] [اكل] [كثير] [سبب] [حرقان المعدة] [Akl] [kvyr] [sbb] [HrqAn AlmEdp]</p>
309-Tr	<p>يحتاج المريض إلى إجازة مرضية yHtAj AlmryD <ly <jAzp mrDyp [المريض] [فإجازة] [إجازة] [مرضية] [AlmryD] f-[HAjp] [<jAzp] [mrDyp] [مرضية] [لازم] [إجازة] [mrDyp] [lAzm] [AjAzp]</p>
310-Tr	<p>يحتاج الطفل إلى جراحة تجميلية yHtAj AlTfl <ly jrAHp tjmylyp [لازم] [الطفل] [عملية] [جميل] [lAzm] [AlTfl] [Emlyp] [jmyl] [الطفل] [لازم] [عملية] [جميل] [AlTfl] [lAzm] [Emlyp] [jmyl]</p>
311-Tr	<p>يقوم هذا المختبر بعمل فحوصات زراعة الأعضاء yqwm h*A Almxtbr bEml fHwSA t zrAEp Al>EDA' [هذا] [المختبر] [فعمل] [فحص] [كثير] [زراعة] [عضو] [كثير] [h*A] [Almxtbr] f-[Eml] [fHS] [kvyr] [zrAEp] [EDw] [kvyr] [هنا] [مختبر] [فعمل] [كل] [فحص] [حق] [زراعة] [عضو] [كثير] [hnA] [mxtbr] f-[Eml] [kl] [fHS] [Hq] [zrAEp] [EDw] [kvyr]</p>
312-Tr	<p>يحمي التطعيم الطفل من الأمراض yHmy AltTEym AlTfl mn Al>mrAD [التطعيم] [فمماية] [الطفل] [من] [المرض] [كثير] [AltTEym] f-[HmAyp] [AlTfl] [mn] [AlmrD] [kvyr] [تطعيم] [فمماية] [طفل] [من] [المرض] [tTEym] f-[HmAyp] [Tfl] [mn] [AlmrD]</p>

313-Tr	<p>قام طبيب النساء بإجراء العملية qAm Tbyb AlnsA' b<jrA' AlEmlyp [طبيب] [نساء وولادة] [عمل] [عملية] [Tbyb] [nsA' wwIAdp] [Eml] [Emlyp] [عملية] [عمل] [من] [طبيب] [نساء وولادة] [Emlyp] [Eml] [mn] [Tbyb] [nsA' wwIAdp]</p>
314-Tr	<p>استخدم هذا المرهم لعلاج تساقط الشعر Astxdm h*A Almrhm lElAj tsAqT Al\$Er [أنت] [فـ] [استخدم] [هذا] [المرهم] [السبب] [علاج] [تساقط الشعر] [>nt] f-[Astxdm] [h*A] [Almrhm] [Alsbb] [ElAj] [tsAqT Al\$Er] [جيد] [أنت] [عمل] [هذا] [المرهم] [سبب] [علاج] [تساقط الشعر] [jyd] [Ant] [Eml] [h*A] [Almrhm] [sbb] [ElAj] [tsAqT Al\$Er]</p>
315-Tr	<p>ينتج الشلل النصفي عن موت الأعصاب yntj Al\$ll AlnSfy En mwt Al>ESAb [الشلل النصفي] [السبب] [موت] [عصب] [كثير] [Al\$ll AlnSfy] [Alsbb] [mwt] [ESb] [kvyr] [الشلل النصفي] [السبب] [أعصاب] [موت] [Al\$ll AlnSfy] [Alsbb] [AESAb] [mwt]</p>
316-Tr	<p>طلب طبيب النساء بتجنب شرب هذا الدواء Tlb Tbyb AlnsA' btjnb \$rb h*A AldwA' [طبيب] [نساء] [فـ] [كلام] [هذا] [العلاج] [شرب] [ممنوع] [Tbyb] [nsA'] f-[klAm] [h*A] [AlElAj] [\$rb] [mmnwE] [طبيب] [نساء] [فـ] [كلام] [ممنوع] [هذا] [الدواء] [Tbyb] [nsA'] f-[klAm] [mmnwE] [h*A] [AldwA']</p>
317-Tr	<p>هل تعاني من مرض السكري؟ hl tEAny mn mrD Alskry? [؟] [أنت] [مرض السكري] [موجود] [هل] [?] [Ant] [mrD Alskry] [mwjwd] [hl] [؟] [أنت] [في] [مرض السكري] [دم] [?] [Ant] [fy] [mrD Alskry] [dm]</p>
318-Tr	<p>لا يحتاج حليب الأم إلى أي إضافات lA yHtAj Hlyb Al>m <lY >y ADAfAt [حليب] [أم] [إضافة] [شي] [ثاني] [حاجة] [لا] [Hlyb] [Am] [<DAfp] [\$y] [vAny] [HAjp] [lA] [حليب] [أم] [وحده] [كفاية] [إضافة] [أكل] [ثاني] [ضروري] [لا] [Hlyb] [Am] [wHdh] [kfAyp] [ADAfp] [Akl] [vAny] [Drwry] [lA]</p>

319-Tr	<p>هل أصبت بالسكتة القلبية من قبل؟ hl >Sbt bAlsktp Alqlbyp mn qbl? [؟] [قبل] [أنت] [مريض] [سكتة قلبية] [هل] [?] [qbl] [>nt] [mryD] [sktp qlbyp] [hl] [قبل] [أنت] [في] [إصابة] [سكتة قلبية؟] [qbl] [Ant] [fy] [<SAbp] [skth qlbyp?]</p>
320-Tr	<p>لا تقلق أنت لا تعاني من السرطان lA tqlq >nt lA tEAny mn AlsrTAn [أنت] [مصاب] [لا] [مرض السرطان] [Ant] [mSAb] [lA] [mrD AlsrTAn] [قلق] [لا] [أنت] [سرطان] [موجود] [لا] [qlq] [lA] [Ant] [srTAn] [mwjwd] [lA]</p>
321-Tr	<p>يجب عليك الانتظار خارج غرفة العمليات yjb Elyk AlAntZAr xArj grfp AlEmlyAt [لازم] [أنت] [انتظار] [خارج] [غرفة] [العملية] [lAzm] [Ant] [AntZAr] [xArj] [grfp] [AlEmlyp] [لازم] [انتظار] [خارج] [lAzm] [AntZAr] [xArj]</p>
322-Tr	<p>قد تسبب قطع الزجاج المكسورة جروحاً نازفة qd tsbb qTE AlzjAj Almkswrp jrwHA nAzfp [ممکن] [جرح نازف] [كثير] [السبب] [قطعة] [الزجاج] [كثير] [مكسور] [mmkn] [jrH nAzf] [kvyr] [Alsbb] [qTEp] [AlzjAj] [kvyr] [mkswr] [زجاج] [مكسور] [ممکن] [سبب] [جروح] [zjAj] [mkswr] [mmkn] [sbb] [jrwH]</p>
323-Tr	<p>حالات الربو الحادة قد تتطور إلى نقص في الأكسجين HAlAt Alrbw AlHADp qd ttTwr <lY nqS fy Al>ksyjyn [نقص] [الأكسجين] [ممکن] [سبب] [مرض] [الربو] [nqS] [AlAksjyn] [mmkn] [sbb] [mrD] [Alrbw] [مرض] [الربو] [كثير] [لاحقاً] [بدل] [أكسجين] [ناقص] [mrD] [Alrbw] [kvyr] [lAHqA] [bd] [Aksjyn] [nAqS]</p>
324-Tr	<p>لديك التهاب في الحيوب الأنفية ldyk AlthAb fy Aljywb Al>nfyp [أنت] [في] [التهاب] [الحيوب الأنفية] [Ant] [fy] [AlthAb] [Aljywb AlAnfyp] [أنت] [في] [التهاب] [الحيوب الأنفية] [Ant] [fy] [AlthAb] [Aljywb AlAnfyp]</p>

325-Tr	<p>سيقوم الطبيب بتخديرك بشكل نصفي أثناء العملية القيصرية syqwm AlTbyb btxdyrk b\$kl nSfy >vnA' AlEmlyp AlqySryp [الطبيب] [ف]تخدير [نصف] [انت] [الجسم] [اثناء] [العملية] [القيصرية] [AlTbyb] f-[txdyr] [nSf] [Ant] [Aljsm] [AvnA'] [AlEmlyp] [AlqySryp] [انت] [في] [ف]تخدير [نص] [وقت] [عملية] [قصيرية] [Ant] [fy] f-[txdyr] [nS] [wqt] [Emlyp] [qSyryp]</p>
326-Tr	<p>أشرب كثير من السوائل لتجنب الاسهال >\$rb kvyr mn AlswA}l ltjnb AlAshAl [انت] [شرب] [ماء] [كثير] [السبب] [وقف] [اسهال] [Ant] [\$rb] [mA'] [kvyr] [Alsbb] [wqf] [AshAl] [أشرب] [ماء] [كثير] [وقف] [اسهال] [A\$rb] [mA'] [kvyr] [wqf] [AshAl]</p>
327-Tr	<p>تعلم المبادئ البسيطة للإسعافات الأولية tElm AlmbAd} AlbsyTp ll<sEAfAt Al>wlyp [انت] [ف]تعلم [كيف] [اسعافات اولية] [Ant] f-[tElm] [kyf] [AsEAfAt Awlyp] [ضروري] [انت] [ف]تعلم [كيف] [اسعافات اولية] [Drwry] [Ant] f-[tElm] [kyf] [AsEAfAt Awlyp]</p>
328-Tr	<p>أنت حامل وتحتاجين إلى طبيب نساء وولادة >nt HAmI wtHtAjyn <IY Tbyb nsA' wwIAdp [لازم] [طبيب] [نساء وولادة] [السبب] [انت] [حامل] [lAzm] [Tbyb] [nsA' wwIAdp] [Alsbb] [Ant] [HAmI] [انت] [حامل] [في] [لازم] [طبيب] [نساء وولادة] [Ant] [HAmI] [fy] [lAzm] [Tbyb] [nsA' wwIAdp]</p>
329-Tr	<p>يجب قياس ضغط الدم والمريض جالس yjb qyAs DgT Aldm wAlmryD jAls [لازم] [المريض] [جالس] [السبب] [عمل] [قياس] [الضغط] [lAzm] [AlmryD] [jAls] [Alsbb] [Eml] [qyAs] [AlDgT] [لازم] [جالس] [علشان] [عمل] [قياس] [ضغط] [الدم] [lAzm] [jAls] [El\$An] [Eml] [qyAs] [DgT] [Aldm]</p>
330-Tr	<p>غالبا يتخلص الطفل من التبول ليلاً gAlbA ytxlS AlTfl mn Altbwl lylA [كثير] [طفل] [ف]عمل [بول] [وقت] [الليل] [kvyr] [Tfl] f-[Eml] [bwl] [wqt] [Allyl] [ممكن] [طفل] [وقف] [بول] [الليل] [mmkn] [Tfl] [wqf] [bwl] [Allyl]</p>

331-Tr	<p>سيقوم المرض بمراقبة المريض بعد العملية</p> <p>syqwm AlmmrD bmrAqbp AlmryD bEd AlEmlyp</p> <p>[العملية] [بعد] [المرض] [فمراقبة] [المريض]</p> <p>[AlEmlyp] [bEd] [AlmmrD] f-[mrAqbp] [AlmryD]</p> <p>[ممرضة] [موجود] [فمتابعة] [العملية] [بعد]</p> <p>[mmrDp] [mwjwd] f-[mtAbEp] [AlEmlyp] [bEd]</p>
332-Tr	<p>يستمر تأثير المخدر بعد العملية بساعات</p> <p>ystmr t>vyr Almxdr bEd AlEmlyp bsAEAt</p> <p>[العملية] [ساعة] [كثير] [بعد] [تأثير] [المخدر] [مستمر]</p> <p>[AlEmlyp] [sAEp] [kvyr] [bEd] [t>vyr] [Almxdr] [mstmr]</p> <p>[تخدير] [بعد] [العملية] [في] [مستمر] [ساعة] [كثير]</p> <p>[txdyr] [bEd] [AlEmlyp] [fy] [mstmr] [sAEp] [kvyr]</p>
333-Tr	<p>يرتبط الجهاز العصبي بالحبل الشوكي</p> <p>yrtbT AljhAz AlESby bAlHbl Al\$wky</p> <p>[الجهاز العصبي] [فارتباط] [مع] [الحبل الشوكي]</p> <p>[AljhAz AlESby] f-[ArtbAT] [mE] [AlHbl Al\$wky]</p> <p>[الجهاز العصبي] [فارتباط] [مع] [الحبل الشوكي]</p> <p>[AljhAz AlESby] f-[ArtbAT] [mE] [AlHbl Al\$wky]</p>
334-Tr	<p>هل تريد إجازة مرضية؟</p> <p>hl tryd <jAzp mrDyp?</p> <p>[؟] [انت] [فإجازة] [إجازة] [مرضية] [هل]</p> <p>[?] [Ant] f-[HAjp] [<jAzp] [mrDyp] [hl]</p> <p>[انت] [تحب] [عمل] [ورقة] [إجازة] [مرضية]</p> <p>[Ant] [tHb] [Eml] [wrqp] [AjAzp] [mrDyp]</p>
335-Tr	<p>الأنسجة مسؤولة عن حركة الجسم</p> <p>Al>nsjp ms&wlp En Hrkp Aljism</p> <p>[الأنسجة] [فعمل] [حركة] [الجسم]</p> <p>[AlAnsjp] f-[Eml] [Hrkp] [Aljism]</p> <p>[الأنسجة] [السبب] [حركة] [الجسم]</p> <p>[AlAnsjp] [Alsbb] [Hrkp] [Aljism]</p>
336-Tr	<p>قد تصاب بالقرحة إذا لم تعالج جرثومة المعدة</p> <p>qd tSAb bAlqrHp <*A lm tEAlj jrvwmp AlmEdp</p> <p>[ممکن] [مرض] [قرحة] [لو] [علاج] [الجرثومة] [يوجد] [لا]</p> <p>[mmkn] [mrD] [qrHp] [lw] [ElAj] [Aljrvwmp] [ywjld] [lA]</p> <p>[ممکن] [مرض] [قرحة] [لو] [علاج] [الجرثومة] [يوجد] [لا]</p> <p>[mmkn] [mrD] [qrHp] [lw] [ElAj] [Aljrvwmp] [ywjld] [lA]</p>

337-Tr	<p>تأثر الجهاز التنفسي من البكتريا t>vr AljhAz Altnfsy mn AlbktryA [الجهاز التنفسي] [ف] [تأثير] [من] [البكتريا] [AljhAz Altnfsy] f-[tAvyr] [mn] [AlbktryA] [الجهاز التنفسي] [في] [بكتريا] [AljhAz Altnfsy] [fy] [bktryA]</p>
338-Tr	<p>طبيب العيون وصف لي نظارة Tbyb AlEywn wSf ly nZArp [طبيب] [العيون] [ف] [كلام] [انا] [نظارة] [Tbyb] [AlEywn] f-[klAm] [AnA] [nZArp] [طبيب] [العيون] [ف] [كلام] [عمل] [نظارة] [Tbyb] [AlEywn] f-[klAm] [Eml] [nZArp]</p>
339-Tr	<p>سيقوم الطبيب بتحويلك إلى طبيب آخر syqwm AlTbyb btHwylk <IY Tbyb —xr [قريباً] [الطبيب] [ف] [تحويل] [انت] [طبيب] [آخر] [qrybA] [AlTbyb] f-[tHwyl] [Ant] [Tbyb] [Axx] [الان] [طبيب] [ف] [تحويل] [طبيب] [آخر] [AlAn] [Tbyb] f-[tHwyl] [Tbyb] [Axx]</p>
340-Tr	<p>لا تعرض اليد المكسورة للحرارة lA tErD Alyd Almkswrp llHrArp [ممنوع] [حرارة] [يد] [مكسورة] [mmnwE] [HrArp] [yd] [mkswrp] [ممنوع] [حرارة] [يد] [مكسورة] [mmnwE] [HrArp] [yd] [mkswrp]</p>
341-Tr	<p>الطبيب الآن في غرفة العمليات AlTbyb Al—n fy grfp AlEmlyAt [الان] [الطبيب] [موجود] [غرفة] [العملية] [AlAn] [AlTbyb] [mwjwd] [grfp] [AlEmlyp] [طبيب] [الان] [غرفة] [عملية] [Tbyb] [AlAn] [grfp] [Emlyp]</p>
342-Tr	<p>اسأل الموظف عن رقم ملفك As>l AlmwZf En rqm mlfk [ف] [سؤال] [موظف] [انت] [ملف] [رقم] [كم] f-[s&Al] [mwZf] [Ant] [mlf] [rqm] [km] [ف] [سؤال] [موظف] [انت] [ملف] [رقم] [كم] f-[s&Al] [mwZf] [Ant] [mlf] [rqm] [km]</p>

343-Tr	<p>تحتاج البنت إلى سماعه أذن tHtAj Albnt <lY smAEp >*n [البنت] [فماجة] [سماعة أذن] [Albnt] f-[HAjp] [smAEp >*n] [البنت] [لازم] [عمل] [سماعه اذن] [Albnt] [lAzm] [Eml] [smAEh A*n]</p>
344-Tr	<p>تألم المريض من الجرح t>lm AlmryD mn AljrH [قبل] [مريض] [ف] [تألم] [السبب] [الجرح] [qbl] [mryD] f-[t>lm] [Alsbb] [AljrH] [قبل] [مريض] [في] [ف] [الم] [السبب] [الجرح] [qbl] [mryD] [fy] f-[Alm] [Alsbb] [AljrH]</p>
345-Tr	<p>التدخين يسبب ارتفاع ضغط الدم Altdxyn ysbb ArtfAE DgT Aldm [التدخين] [سبب] [ف] [ارتفاع] [ضغط الدم] [Altdxyn] [sbb] f-[ArtfAE] [DgT Aldm] [التدخين] [سبب] [ارتفاع] [ضغط الدم] [Altdxyn] [sbb] [ArtfAE] [DgT Aldm]</p>
346-Tr	<p>قد تتسبب جرثومة المعدة في إجهاض الحمل qd ttsbb jrvwmp AlmEdp fy <jhAD AlHml [ممکن] [جرثومة] [المعدة] [سبب] [حمل] [إجهاض] [mmkn] [jrvwmp] [AlmEdp] [sbb] [Hml] [AjhAD] [جرثومة] [سبب] [حمل] [إجهاض] [jrvwmp] [sbb] [Hml] [AjhAD]</p>
347-Tr	<p>يجب غسل الخضروات قبل الأكل yjb gsl AlxDrwAt qbl Al>kl [الاكل] [قبل] [لازم] [خضروات] [غسل] [AlAkl] [qbl] [lAzm] [xDrwAt] [gsl] [لازم] [غسل] [الخضروات] [قبل] [الاكل] [lAzm] [gsl] [AlxDrwAt] [qbl] [AlAkl]</p>
348-Tr	<p>يوجد الم في البطن ywj d Alm fy AlbTn [الم] [ف] [موجود] [في] [البطن] [Alm] f-[mwjwd] [fy] [AlbTn] [الم] [في] [البطن] [Alm] [fy] [AlbTn]</p>

349-Tr	<p>غالباً ينتظر المريض يوم كامل لتتأج الفحوصات gAlbA yntZr AlmryD ywm kAml lntA}j AlfHwSAt [ممكن] [مريض] [انتظار] [فحص] [يوم] [mmkn] [mryD] [AntZAr] [fHS] [ywm] [ممكن] [انتظار] [فحص] [يوم] [كامل] [mmkn] [AntZAr] [fHS] [ywm] [kAml]</p>
350-Tr	<p>تسبب الزيوت حرقان شديد في المعدة tsbb Alzywt HrqaAn \$dyd fy AlmEdp [حرقان المعدة] [سبب] [الزيت] [كثير] [HrqaAn AlmEdp] [sbb] [Alzyt] [kvyr] [زيت] [سبب] [حرقان] [معدة] [zyt] [sbb] [HrqaAn] [mEdp]</p>
351-Tr	<p>من أعراض المرض الاسبال mn >ErAD AlmrD AlAshAl [اسبال] [علامة] [مرض] [AshAl] [ElAmp] [mrD] [بداية] [مرض] [في] [اسبال] [bdAyp] [mrD] [fy] [AshAl]</p>
352-Tr	<p>وقع الطفل على الأرض وانكسرت يده wqE AlTfl ElY Al>rD wAnksrt ydh [قبل] [الطفل] [يد] [كسر] [السبب] [سقط] [على] [الأرض] [qbl] [AlTfl] [yd] [ksr] [Alsbb] [sqT] [ElY] [Al>rD] [طفل] [وقع] [ارض] [يدة] [مكسور] [Tfl] [wqE] [ArD] [ydp] [mkswr]</p>
353-Tr	<p>هل يمكن استخدام نقاط الحساسية للأطفال؟ hl ymkn AstxdAm nqAT AlHsAsyp ll>TfAl? [?] [ممكن] [طفل] [ف] [استخدم] [نقطة] [كثير] [الحساسية] [هل] [?] [mmkn] [Tfl] f-[Astxdm] [nqTp] [kvyr] [AlHsAsyp] [hl] [ممكن] [طفل] [عادي] [قطرة] [حساسية] [mmkn] [Tfl] [EAdy] [qTrp] [HsAsyp]</p>
354-Tr	<p>اشعر بمغص شديد A\$Er bmgS \$dyd [انا] [الم] [مغص] [قوي] [AnA] [Alm] [mgS] [qwy] [انا] [في] [مغص] [شديد] [AnA] [fy] [mgS] [\$dyd]</p>

355-Tr	<p>سوف انتظر حتى الانتهاء من الفحوصات swf AntZr HtY AlAnthA' mn AlfHwSAat [انا] [ف]انتظار [حتى] [فحص] [اتهي] [AnA] f-[AAntZAr] [HtY] [fHS] [AnthY] [انا] [ف]انتظار [بعد] [فحص] [اتهي] [AnA] f-[AntZAr] [bEd] [fHS] [AnthY]</p>
356-Tr	<p>حدد الطبيب مضاد حيوي لعلاج البكتريا Hdd AlTbyb mDAd Hywy lElAj AlbktryA [قبل] [الطبيب] [ف]كتابة [مضاد حيوي] [السبب] [علاج] [البكتريا] [qbl] [AlTbyb] f-[ktAbp] [mDAd Hywy] [Alsbb] [ElAj] [AlbktryA] [قبل] [طبيب] [ف]كتابة [مضاد حيوي] [البكتيريا] [qbl] [Tbyb] f-[ktAbp] [mDAd Hywy] [>lbktryA]</p>
357-Tr	<p>احرص على أخذ الدواء في الوقت المحدد AHrS ElY >x* AldwA' fy Alwqt AlmHdd [لازم] [ف]أخذ [العلاج] [وقت] [الضبط] [lAzm] f-[Ax*] [AlElAj] [wqt] [AlZbT] [لازم] [دواء] [وقت] [الضبط] [lAzm] [dwA'] [wqt] [AlDbT]</p>
358-Tr	<p>هل المغص في جميع مناطق البطن أو مكان واحد؟ hl AlmgS fy jmyE mnATq AlbTn >w mkAn wAHd? [؟] [المغص] [في] [البطن] [كل] [أو] [هنا] [فقط] [هل] [?] [AlmgS] [fy] [AlbTn] [kl] [Aw] [hnA] [fqT] [hl] [اين] [مغص] [هنا] [كله] [ولا] [اين] [Ayn] [mgS] [hnA] [klh] [wIA] [Ayn]</p>
359-Tr	<p>الرجاء الانتظار AlrjA' AlAntZAr [ممكن] [انتظار] [mmkn] [AntZAr] [ممكن] [انتظار] [هنا] [mmkn] [AntZAr] [hnA]</p>
360-Tr	<p>تنتشر الإعاقة السمعية في الدول العربية tnt\$r Al<EAqp AlsmEyp fy Aldwl AlErbyyp [الإعاقة السمعية] [ف]انتشار [دولة] [عربية] [كثير] [Al<EAqp AlsmEyp] f-[Ant\$Ar] [dwlp] [Erbyyp] [kvyr] [إعاقة سمعية] [كثير] [ف]وجود [في] [الدول] [عربية] [<EAqp smEyp] [kvyr] f-[mwjwd] [fy] [Aldwl] [Erbyyp]</p>
361-Tr	<p>هل لديك تحويل من مستشفى آخر؟</p>

	<p>hl ldyk tHwyl mn mst\$FY —xr?</p> <p>[؟] [انت] [ف] [موجود] [تحويل] [مستشفى] [آخر] [هل]</p> <p>[?] [Ant] f-[mwjwd] [tHwyl] [mst\$FY] [Axr] [hl]</p> <p>[انت] [في] [تحويل] [مستشفى] [آخر]</p> <p>[Ant] [fy] [tHwyl] [mst\$FY] [Axr]</p>
362-Tr	<p>يفضل إجراء التحليل الطبي سنوياً</p> <p>yfDl <jrA' AltHlyl AlTby snwyA</p> <p>[جيد] [عمل] [التحليل الطبي] [كل] [سنة]</p> <p>[jyd] [Eml] [AltHlyl AlTby] [kl] [snp]</p> <p>[لازم] [عمل] [التحليل الطبي] [كامل] [كل] [سنة]</p> <p>[lAzm] [Eml] AltHlyl AlTby [kAml] [kl] [snp]</p>
363-Tr	<p>تمتد الأعصاب في الجسم</p> <p>tmtD Al>ESAb fy AljSm</p> <p>[العصب] [كثير] [موجود] [كل] [الجسم]</p> <p>[AlESb] [kvyr] [mwjwd] [kl] [AljSm]</p> <p>[العصب] [كثير] [على] [طول] [الجسم]</p> <p>[AlESb] [kvyr] [ElY] [Twl] [AljSm]</p>
364-Tr	<p>يجب أخذ الإبر حسب الوصفة الطبية</p> <p>yjb >x* Al<br Hsb AlwSfp AlTbyb</p> <p>[لازم] [إبرة] [أخذ] [نفس] [الوصفة] [حق] [الطبيب]</p> <p>[lAzm] [<brp] [>x*] [nfs] [AlwSfp] [Hq] [AlTbyb]</p> <p>[لازم] [عمل] [إبر] [نفس] [الوصفة] [حق] [الطبيب]</p> <p>[lAzm] [Eml] [Abr] [nfs] [AlwSfp] [Hq] [AlTbyb]</p>
365-Tr	<p>تناول الكثير من الخضروات مثل الجرجير</p> <p>tnAwl Alkvyr mn AlxDrwAt mvl Aljrjyr</p> <p>[انت] [لازم] [اكل] [كثير] [خضروات] [مثل] [الجرجير]</p> <p>[Ant] [lAzm] [Akl] [kvyr] [xDrwAt] [mvl] [Aljrjyr]</p> <p>[لازم] [اكل] [خضروات] [مختلف] [مثل] [جرجير]</p> <p>[lAzm] [Akl] [xDrwAt] [mxltf] [mvl] [jrjyr]</p>
366-Tr	<p>هل يترافق الإسهال مع مغص؟</p> <p>hl ytrAfq Al<shAl mE mgS?</p> <p>[؟] [انت] [في] [إسهال] [مع] [المغص] [هل]</p> <p>[?] [Ant] [fy] [AshAl] [mE] [AlmgS] [hl]</p> <p>[؟] [انت] [في] [إسهال] [مع] [مغص] [هل]</p> <p>[?] [Ant] [fy] [AshAl] [mE] [mgS] [hl]</p>
367-Tr	<p>هل زرت الطبيب من قبل؟</p> <p>hl zrt AlTbyb mn qbl?</p>

	<p>[؟] [قبل] [انت] ف[ذهاب] [الطبيب] [هل]</p> <p>[?] [qbl] [Ant] f-[*hAb] [AlTbyb] [hl]</p> <p>دكتور [قبل] [في] [او] [اول] [مرة]</p> <p>[dktwr] [qbl] [fy] [Aw] [Awl] [mrp]</p>
368-Tr	<p>يزيد شرب اللبن من حرقان المعدة</p> <p>yzyd \$rb Allbn mn HrqAn AlmEdp</p> <p>[شرب] [البن] [سبب] [زيادة] [حرقان] [المعدة]</p> <p>[\$rb] [Albn] [sbb] [zyAdp] [HrqAn] [AlmEdp]</p> <p>[شرب] [لبن] [زيادة] [حرقان] [معدة]</p> <p>[\$rb] [lbn] [zyAdp] [HrqAn] [mEdp]</p>
369-Tr	<p>من أسباب التهاب اللثة المأكولات الساخنة</p> <p>mn >sbAb AlthAb Allvp Alm>kwIAt AlsAxnp</p> <p>[اكل] [ساخن] [سبب] [التهاب] [اللثة]</p> <p>[Akl] [sAxn] [sbb] [AlthAb] [Allvp]</p> <p>[سبب] [التهاب] [لثة] [اكل] [ساخن]</p> <p>[sbb] [AlthAb] [ltp] [Akl] [sAxn]</p>
370-Tr	<p>لا يوجد علاج للإيدز</p> <p>lA ywjd ElAj ll<ydz</p> <p>[علاج] [إيدز] [موجود] [لا]</p> <p>[ElAj] [<ydz] [mwjwd] [lA]</p> <p>[إيدز] [موجود] [لا] [علاج]</p> <p>[Aydz] [mwjwd] [lA] [ElAj]</p>
371-Tr	<p>يمكن الكشف عن المنغولي أثناء الحمل</p> <p>ymkn Alk\$f En Almngwly >vnA' AlHml</p> <p>[أثناء] [الحمل] [يمكن] [معرفة] [المنغولي]</p> <p>[>vnA'] [AlHml] [mmkn] [mErfp] [Almngwly]</p> <p>[يمكن] [فحص] [المنغولي] [وقت] [الحمل]</p> <p>[mmkn] [fHS] [Almngwly] [wqt] [AlHml]</p>
372-Tr	<p>تساعد الابتسامه مرضى السرطان في الشفاء</p> <p>tsAEd AlAbtsAmh mrDY AlsrTAn fy Al\$fA'</p> <p>[ابتسامه] [مساعدة] [مرضى] [سرطان] [علاج] [سريع]</p> <p>[AbtsAmp] [msAEdp] [mryD] [mrD AlsrTAn] [ElAj] [sryE]</p> <p>[ابتسامه] [مرضى] [سرطان] [شفاء] [سريع]</p> <p>[AbtsAmp] [mryD] [mrD AlsrTAn] [\$fA'] [sryE]</p>
373-Tr	<p>يجب على المريض اتباع ارشادات الطبيب</p> <p>yjb EIY AlmryD AtbAE Ar\$AdAt AlTbyb</p> <p>[لازم] [مرضى] ف[متابعة] [كلام] [الطبيب]</p>

	<p>[lAzm] [mryD] f-[mtAbEp] [klAm] [AlTbyb] [ضروري] [فمتابعة] [كلام] [طبيب] [بالضبط] [Drwry] f-[mtAbEp] [klAm] [Tbyb] [bAlDbT]</p>
374-Tr	<p>يعاني المعاقين ذهنياً من نقص الذكاء yEAny AlmEAqyn *hnyA mn nqS Al*kA' [معاق ذهني] [مشكلة] [ذكاء] [قليل] [mEAq *hny] [m\$klp] [*kA'] [qlyl] [شخص] [اعاقه ذهنية] [ممکن] [ذكاء] [قليل] [\$xS] [AEAqh *hny] [mmkn] [*kA'] [qlyl]</p>
375-Tr	<p>طلب طبيب العظام ان اعمل اشعه Tlb Tbyb AlEZAm An AEml A\$Eh [طبيب] [العظم] [قال] [انا] [عمل] [اشعة] [Tbyb] [AlEZm] [qAl] [AnA] [Eml] [A\$Ep] [طبيب] [عظم] [فكلام] [لازم] [اشعة] [Tbyb] [EZm] f-[klAm] [lAzm] [A\$Ep]</p>
376-Tr	<p>زور الطبيب مباشرة عند الشعور بأي ألم zwr AlTbyb mbA\$rp End Al\$Ewr b>y >lm [انت] [في] [الم] [انت] [لازم] [فذهاب] [الطبيب] [Ant] [fy] [Alm] [Ant] [lAzm] f-[*hAb] [AlTbyb] [لازم] [فذهاب] [طبيب] [متى] [في] [الم] [lAzm] f-[*hAb] [Tbyb] [mtY] [fy] [Alm]</p>
377-Tr	<p>يصف الطبيب العلاج ySf AlTbyb AlElAj [الان] [طبيب] [فكتابة] [العلاج] [AlAn] [Tbyb] f-[ktAbp] [AlElAj] [الان] [طبيب] [فكتابة] [علاج] [AlAn] [Tbyb] f-[ktAbp] [ElAj]</p>
378-Tr	<p>سأذهب لزيارة الطبيب غدا s>*hb lzyArp AlTbyb gdA [غدا] [انا] [فذهاب] [الى] [الطبيب] [gdA] [AnA] f-[*hAb] [AlY] [AlTbyb] [غدا] [ذهاب] [رؤية] [دكتور] [gdA] [*hAb] [r&yp] [dktrw]</p>
379-Tr	<p>أكل الخضروات بدون غسل يسبب البكتريا >kl AlxDrwAt bdwn gsl ysbb AlbktryA [فأكل] [الخضروات] [غسل] [لا] [سبب] [بكتريا] f-[>kl] [AlxDrwAt] [gsl] [lA] [sbb] [bktryA]</p>

	<p>[بكتريا] [مرض] [السبب] [اكل] [خضروات] [غير] [مغسول] [bktryA] [mrD] [Alsbb] [Akl] [xDrwAt] [gyr] [mgswl]</p>
380-Tr	<p>أريد أن أطلب إجازة مرضية >ryd >n >Tlb <jAzp mrDyp [أنا] [ف] [إجازة] [مرضية] [AnA] f-[HAjp] [<jAzp] [mrDyp] [أنا] [ف] [إجازة] [ورقة] [مرض] [AnA] f-[HAjp] [wrqp] [AjAzp] [mrD]</p>
381-Tr	<p>نسبة الدهون لديك مرتفعة nsbp Aldhwn ldyk mrtfEp [انت] [دهن] [كثير] [Ant] [dhn] [kvyr] [انت] [دهن] [كثير] [في] [الدم] [Ant] [dhn] [kvyr] [fy] [Aldm]</p>
382-Tr	<p>على الحامل زيارة الطبيب بشكل دوري ElY AlHAml zyArp AlTbyb b\$kl dwry [لازم] [حامل] [ذهاب] [الطبيب] [دائماً] [lAzm] [HAml] [*hAb] [AlTbyb] [dA}mA] [حامل] [لازم] [مستمر] [رؤية] [دكتور] [HAml] [lAzm] [mstmr] [r&yp] [dktwr]</p>
383-Tr	<p>تؤكد صور الأشعة وجود كسر بالرجل t&kd Swr Al>\$Ep wjwd ksr bAlrjl [صورة اشعة] [كثير] [موجود] [رجل] [كسر] [Swrp A\$Ep] [kvyr] [mwjwd] [rjl] [ksr] [صورة اشعة] [واضح] [اكيد] [كسر] [رجل] [Swrp A\$Ep] [wADH] [Akyd] [ksr] [rjl]</p>
384-Tr	<p>أشعر بأزمة قلبية شديدة >\$Er b>zmp qlbyp \$dydp [الان] [أنا] [ف] [شعور] [أزمة قلبية] [قوي] [AlAn] [>nA] f-[\$Ewr] [>zmp qlbyp] [qwy] [الان] [أنا] [في] [أزمة قلبية] [شديد] [AlAn] [AnA] [fy] [Azmp qlbyp] [\$dyd]</p>
385-Tr	<p>تورم القدمين شائع عند الحوامل twrm Alqdmyn \$A}E End AlHwAml [حامل] [ثلاثة] [كثير] [ورم] [القدم] [HAml] [vlAvp] [kvyr] [wrm] [Alqdm] [حامل] [ممكن] [قدم] [ورم]</p>

	[HAml] [mmkn] [qdm] [wrm]
386-Tr	<p>عملت فحص النظر عند طبيب العيون Emlt fHS AlnZr End Tbyb AlEywn [قبل] [انا] [عمل] [فحص] [النظر] [عند] [طبيب] [العيون] [qbl] [AnA] [Eml] [fHS] [AlnZr] [End] [Tbyb] [AlEywn] [انا] [في] [فحص] [عيون] [عند] [طبيب] [عيون] [AnA] [fy] [fHS] [Eywn] [End] [Tbyb] [Eywn]</p>
387-Tr	<p>هل فتحت ملف هنا من قبل؟ hl ftHt mlf hnA mn qbl? [؟] [قبل] [انت] [ملف] [موجود] [هنا] [هل] [?] [qbl] [Ant] [mlf] [mwjwd] [hnA] [hl] [في] [اول] [ملف] [هنا] [fy] [Awl] [mlf] [hnA]</p>
388-Tr	<p>هل أجريت أشعة ليزر؟ hl >jryt >\$Ep lyzr? [؟] [أنت] [فعل] [أشعة ليزر] [قبل] [هل] [?] [>nt] f-[Eml] [>\$Ep lyzr] [qbl] [hl] [انت] [في] [قبل] [اشعه ليزر] [؟] [Ant] [fy] [qbl] [A\$Eh lyzr] [?]</p>
389-Tr	<p>توجد علاقة بين البنكرياس و مرض السكر twjd ElAqp byn AlbnkryAs w mrD Alskr [موجود] [علاقة] [بين] [البنكرياس] [و] [مرض السكري] f-[mwjwd] [ElAqp] [byn] [AlbnkryAs] [w] [mrD Alskry] [البنكرياس] [مسئول] [مرض السكري] [AlbnkryAs] [ms}wl] [mrD Alskry]</p>
390-Tr	<p>تساعد أشعة الليزر في كشف الكسور tsAEd >\$Ep Allyzr fy k\$f Alkswr [أشعة الليزر] [فمساعدة] [معرفة] [كسر] [كثير] [>\$Ep Allyzr] f-[msAEdp] [mErfp] [ksr] [kvyr] [اشعه ليزر] [صورة] [واضح] [اين] [كسر] [A\$Eh lyzr] [Swrp] [wADH] [Ayn] [ksr]</p>
391-Tr	<p>اشرب الدواء حتى لا يزيد التهاب A\$rb AldwA' HtY lA zyzyd AlAlthAb [لازم] [فشرب] [الدواء] [السبب] [التهاب] [زيادة] [لا] [lAzm] f-[\$rb] [AldwrA'] [Alsbb] [AlthAb] [zyAdp] [lA] [لازم] [فشرب] [دواء] [او] [لاحقا] [التهاب] [اكثر] [lAzm] f-[\$rb] [dwA'] [Aw] [lAHqA] [AlthAb] [Akvr]</p>

392-Tr	<p>لاستخدم الادوية بكثرة lAtstxdm AlAdwyp bkvrp [علاج] ف[استخدام] [لا] [كثير] [ElAj] f-[AstxdAm] [lA] [kvyr] [دواء] [كثير] ف[استخدام] [لا] [dwA'] [kvyr] f-[AstxdAm] [lA]</p>
393-Tr	<p>ستساعدك سماعة الأذن على السمع stsAEdk smAEp Al>*n ElY AlsmE [قريباً] [سماعة أذن] [انت] ف[مساعدة] [سمع] [qrybA] [smAEp >*n] [Ant] f-[msAEdp] [smE] [سماعة اذن] ف[مساعدة] [سمع] [تمام] [smAEh A*n] f-[msAEdp] [smE] [tmAm]</p>
394-Tr	<p>كم رقم ملفك؟ km rqm mlfk? [؟] [انت] [ملف] [رقم] [كم] [?] [Ant] [mlf] [rqm] [km] [ملف] [انت] [رقم] [كم] [mlf] [Ant] [rqm] [km]</p>
395-Tr	<p>تستخدم نقط الفم لعلاج البرد والكحة tstxdm nqT Alfm lElAj Albrd wAlkHp [قطرة] [الفم] ف[استخدام] [علاج] [البرد] [الكحة] [qTrp] [Alfm] f-[AstxdAm] [ElAj] [Albrd] [AlkHp] [هذا] [قطرة] [فم] [دواء] [برد] [سعال] [h*A] [qTrp] [fm] [dwA'] [brd] [sEAl]</p>
396-Tr	<p>يجب شرب الحليب صباحاً yjb \$rb AlHlyb SbAHA [لازم] [الحليب] ف[شرب] [وقت] [الصباح] [lAzM] [AlHlyb] f-[\$rb] [wqt] [AlSbAH] [لازم] ف[شرب] [حليب] [صباح] [lAzM] f-[\$rb] [Hlyb] [SbAH]</p>
397-Tr	<p>خذ إبرة مضادة للكراز لأن الجرح ملوث x* <brp mDAdp llkzAz l>n AljrH mlwv [انت] ف[اخذ] [إبرة] [الكراز] [السبب] [الجرح] [ملوث] [Ant] f-[Ax*] [Abrp] [AlkzAz] [Alsbb] [AljrH] [mlwv] [لازم] [إبرة] [كراز] [تسمم] [سبب] [جرح] [وسخ] [lAzM] [Abrp] [kzAz] [tsmm] [sbb] [jrH] [wsx]</p>
398-Tr	<p>لف الشاش على يدك المكسورة</p>

	<p>If Al\$A\$ ElY ydk Almkswrp</p> <p>[أنت] [فلف] [الشاش] [حول] [أنت] [يد] [مكسور]</p> <p>[>nt] f-[lf] [Al\$A\$] [Hwl] [Ant] [yd] [mkswr]</p> <p>[أنت] [لازم] [فلف] [الشاش] [على] [يد] [المكسور]</p> <p>[Ant] [lAzm] f-[lf] [Al\$A\$] [ElY] [yd] [Almkswr]</p>
399-Tr	<p>تساهم الرياضة في علاج السكري</p> <p>tsAhm AlryADp fy ElAj Alskry</p> <p>[الرياضة] [مساعدة] [علاج] [مرض السكري]</p> <p>[AlryADp] [msAEdp] [ElAj] [mrD Alskry]</p> <p>[رياضة] [مساعدة] [علاج] [مرض السكري]</p> <p>[ryADp] [msAEdp] [ElAj] [mrD Alskry]</p>
400-Tr	<p>يجب الاتصال بالطبيب بسرعة</p> <p>yjb AlAtSAI bAlTbyb bsrEp</p> <p>[لازم] [اتصال] [طبيب] [سرعة]</p> <p>[lAzm] [AtSAI] [Tbyb] [srEp]</p> <p>[لازم] [اتصال] [طبيب] [سرعة]</p> <p>[lAzm] [AtSAI] [Tbyb] [srEp]</p>
401-Tr	<p>أشرب كثير من الماء لتجنب الإمساك</p> <p>>\$rb kvyr mn AlmA' ltjnb Al<msAk</p> <p>[أنت] [ف] [شرب] [ماء] [كثير] [السبب] [إمساك] [وقف]</p> <p>[Ant] f-[\$rb] [mA'] [kvyr] [Alsbb] [AmsAk] [wqf]</p> <p>[لازم] [ماء] [كثير] [حفظ] [إمساك] [يوجد] [لا]</p> <p>[lAzm] [mA'] [kvyr] [HfZ] [AmsAk] [ywjD] [lA]</p>
402-Tr	<p>أشعر بآلم في الأمعاء الغليظة</p> <p>>\$Er b>lm fy Al>mEA' AlglyZp</p> <p>[الآن] [أنا] [ف] [آلم] [في] [الأمعاء الغليظة]</p> <p>[AlAn] [>nA] f->lm] [fy] [Al>mEA' AlglyZp]</p> <p>[أنا] [في] [ف] [آلم] [أمعاء غليظة]</p> <p>[AnA] [fy] f-[Alm] [AmEA' glyZp]</p>
403-Tr	<p>سنستخدم المنظار لمعرفة النزيف</p> <p>snstxdm AlmnZAr lmErfp Alnzyf</p> <p>[نحن] [ف] [استخدام] [منظار] [السبب] [معرفة] [النزيف]</p> <p>[nHn] f-[AstxdAm] [mnZAr] [Alsbb] [mErfp] [Alnzyf]</p> <p>[قريباً] [ف] [عمل] [منظار] [سبب] [معرفة] [مثلاً] [في] [نزيف] [أو] [مافي]</p> <p>[qrybA] f-[Eml] [mnZAr] [sbb] [mErfp] [mvIA] [fy] [nzyf] [Aw] [mAfy]</p>
404-Tr	<p>يجب عمل أشعة لمعرفة سبب الصداع</p> <p>yjb Eml >\$Ep lmErfp sbb AlSdAE</p>

	<p>[لازم] [ف]عمل [صورة اشعة] [السبب] [معرفة] [الصداع] [lAzm] f-[Eml] [Swrp A\$Ep] [Alsbb] [mErfp] [AlSdAE] [لازم] [عمل] [صورة اشعة] [سبب] [صداع] [lAzm] [Eml] [Swrp A\$Ep] [sbb] [SdAE]</p>
405-Tr	<p>الإعاقة نوعان عقلية وجسدية Al<EAqp nwEAn Eqlyp wjsdyp [الإعاقة] [اثنان] [نوع] [عقل] [و] [جسد] [Al<EAqp] [AvnAn] [nwE] [Eq] [w] [jsd] [الاعاقه] [اثنين] [نوع] [اعاقه] [عقل] [و] [جسد] [AlAEaQh] [Avnyn] [nwE] [AEaQh] [Eq] [w] [jsd]</p>
406-Tr	<p>لدي موعد مع طبيب النساء والولادة ldy mwEd mE Tbyb AlnsA' wAlwlAdp [انا] [موجود] [موعد] [مع] [طبيب] [نساء وولادة] [AnA] [mwjwd] [mwEd] [mE] [Tbyb] [nsA' ww]Adp [انا] [في] [موعد] [مع] [طبيب] [نساء وولادة] [AnA] [fy] [mwEd] [mE] [Tbyb] [nsA' ww]Adp</p>
407-Tr	<p>تحتاجين إلى عملية قيصريّة tHtAjyn <ly Emlyp qySryp [لازم] [انت] [عملية] [قيصرية] [lAzm] [Ant] [Emlyp] [qySyryp] [لازم] [عملية] [قيصرية] [lAzm] [Emlyp] [qSyryp]</p>
408-Tr	<p>أشرب ماء كثير عند الإمساك >\$rb mA' kvyr End Al<msAk [انت] [ف]شرب [ماء] [كثير] [اثناء] [في] [اسهال] [Ant] f-[\$rb] [mA'] [kvyr] [AvnA'] [fy] [AshAl] [مثلا] [في] [امساك] [لازم] [ف]شرب [ماء] [كثير] [mv]lA [fy] [AmsAk] [lAzm] f-[\$rb] [mA'] [kvyr]</p>
409-Tr	<p>استخدم ميزان الحرارة تحت ذراع طفلك Astxdm myzAn AlHrArp tHt *rAE Tflk [انت] [ف]استخدام [مقياس الحرارة] [تحت] [يد] [الطفل] [Ant] f-[AstxdAm] [mqyAs AlHrArp] [tHt] [yd] [AlTfl] [افضل] [مقياس الحرارة] [تحت] [يد] [طفل] [AfDl] [mqyAs AlHrArp] [tHt] [yd] [Tfl]</p>
410-Tr	<p>يحتوي العمود الفقري على الحبل الشوكي yHtwy AlEmwd Alfqry ElY AlHbl Al\$wky [العمود الفقري] [داخل] [في] [الحبل الشوكي] [AlEmwd Alfqry] [dAxl] [fy] [AlHbl Al\$wky]</p>

	<p>[العمود] [الفقري] [داخل] [الحبل الشوكي] [AlEmwd] [Alfqry] [dAxl] [AlHbl Al\$wky]</p>
411-Tr	<p>تعمل الحامل أشعة عند طبيب النساء شهرياً tEml AlHAml >\$Ep End Tbyb AlnsA' \$hryA [كل] [شهر] [الحامل] [عمل] [أشعة] [عند] [طبيب] [نساء وولادة] [kl] [\$hr] [AlHAml] [Eml] [A\$Ep] [End] [Tbyb] [nsA' wwAdp] [حامل] [عمل] [كشافة] [عند] [طبيب] [نساء وولادة] [كل] [شهر] [HAml] [Eml] [k\$Afp] [End] [Tbyb] [nsA' wwAdp] [kl] [\$hr]</p>
412-Tr	<p>يجب أن نقيس لك ضغط الدم yjb >n nqys lk DgT Aldm [نحن] [لازم] [فقياس] [انت] [ضغط الدم] [nHn] [lAzm] f-[qyAs] [Ant] [DgZ Aldm] [لازم] [فقياس] [ضغط دم] [lAzm] f-[qyAs] [DgT dm]</p>
413-Tr	<p>أنتِ حامل بولد >nti HAml bwld [انت] [حامل] [ولد] [Ant] [HAml] [wld] [انت] [طفل] [ايش] [ولد] [Ant] [Tfl] [Ay\$] [wld]</p>
414-Tr	<p>يؤدي الجرح غالباً إلى الغرغرينا y&dy AljrH gAlbA <IY AlgrgrynA [الجرح] [غالبا] [سبب] [غرغرينا] [AljrH] [gAlbA] [sbb] [grgrynA] [الجرح] [قريبا] [مرض] [غرغرينا] [AljrH] [qrybA] [mrD] [grgrynA]</p>
415-Tr	<p>يعاني الطفل من الإعاقة السمعية منذ الولادة yEAny AlTfl mn Al<EAqp AlsmEyp mn* AlwlAdp [قبل] [ولادة] [الطفل] [مريض] [إعاقة سمعية] [qbl] [wlAdp] [AlTfl] [mryD] [<EAqp smEyp] [قبل] [الطفل] [ولادة] [إعاقة سمعية] [qbl] [AlTfl] [wlAdp] [<EAqp smEyp]</p>
416-Tr	<p>يرجى الانتظار في قسم الرجال yrjY AlAntZAr fy qsm AlrjAl [ممكن] [انتظار] [مع] [الرجل] ++ [mmkn] [AntZAr] [mE] [Alrjl] ++ [ممكن] [انتظار] [مع] [الرجل] ++ [هناك]</p>

	[mmkn] [AntZAr] [mE] [Alrjl]++ [hnAk]
417-Tr	لا يدوم الزكام أكثر من أسبوع lA ydwm AlzkAm >kvr mn >sbwE [الزكام] [استمرار] [لا] [أسبوع] [AlzkAm] [AstmrAr] [lA] [>sbwE] [زكام] [ممنوع] [مستمر] [أسبوع] [zkAm] [mmnwE] [mstmr] [AsbwE]
418-Tr	تقوم الأمعاء الدقيقة بامتصاص الطعام tqwm Al>mEA' Aldqyqp bAmtSAS AlTEAm [الأمعاء الدقيقة] [عمل] [فـ] [سحب] [الأكل] [Al>mEA' Aldqyqp] [Eml] f-[sHb] [Al>kl] [عمل] [الأمعاء الدقيقة] [فـ] [امتصاص] [الطعام] [Eml] [Al>mEA' Aldqyqp] f-[AmtSAS] [AlTEAm]
419-Tr	تحتاج جمجمة المريض إلى عناية tHtAj jmjmp AlmryD <lY EnAyp [جمجمة] [المريض] [فـ] [ماجة] [عناية] [jmjmp] [AlmryD] f-[HAjp] [EnAyp] [لازم] [انتباه] [مريض] [جمجمة] [lAzm] [AntbAh] [mryD] [jmjmp]
420-Tr	الدهون الصحية تقلل من نسبة الكوليسترول السيء Aldhwn AlSHyp tqll mn nsbp Alkwlstwrl Alsy' [دهن] [جيد] [ممكن] [فـ] [قليل] [الكوليسترول] [السيء] [dhn] [jyd] [mmkn] f-[qlyl] [Alkwlstwrl] [Alsy'] [دهن] [جيد] [فـ] [قليل] [كوليسترول] [سيء] [dhn] [jyd] f-[qlyl] [kwlstwrl] [sy']
421-Val	انتشر المرض نتيجة التبرع بدم ملوث Ant\$r AlmrD ntyjp AltbrE bdm mlwv [قبل] [المرض] [فـ] [نشر] [السبب] [التبرع] [دم] [ملوث] [qbl] [AlmrD] f-[n\$r] [Alsbb] [AltbrE] [dm] [mlwv] [قبل] [مرض] [فـ] [نشر] [السبب] [تبرع] [دم] [ملوث] [qbl] [mrD] f-[n\$r] [Alsbb] [tbrE] [dm] [mlwv]
422-Val	ينتج ألم اللثة عن وجود بكتيريا yntj >lm Allvp En wjwd bktyryA [ألم] [اللثة] [السبب] [فـ] [وجود] [بكتيريا] [>lm] [Allvp] [Alsbb] f-[wjwd] [bktyryA] [الم] [اللثة] [السبب] [بكتيريا] [Alm] [Allvp] [Alsbb] [bktyryA]

423-Val	<p>يعاني الطفل من مرض التوحد yEAny AlTfl mn mrD AltwHd [الطفل] [مريض] [مرض] [التوحد] [AlTfl] [mryD] [mrD] [AltwHd] [طفل] [في] [مرض] [توحد] [Tfl] [fy] [mrD] [twHd]</p>
424-Val	<p>لا تجعل الماء يصل إلى الجرح lA tJEl AlmA' ySl <ly AljrH [انت] [الماء] [فدخول] [الجرح] [لا] [Ant] [AlmA'] f-[dxwl] [AljrH] [lA] [ممنوع] [ماء] [فدخول] [الجرح] [mmnwE] [mA'] f-[dxwl] [AljrH]</p>
425-Val	<p>الدم ينزف من الجرح Aldm ynzf mn AljrH [الدم] [فنزيف] [من] [الجرح] [Aldm] f-[nzyf] [mn] [AljrH] [في] [دم] [فنزيف] [من] [الجرح] [fy] [dm] f-[nzyf] [mn] [AljrH]</p>
426-Val	<p>هل تستطيع استخدام جهاز قياس الضغط؟ hl tstTyE AstxdAm jhAz qyAs AlDgT? [] [؟] [أنت] [ممكن] [فأستخدام] [جهاز قياس الضغط] [هل] [] [?>nt] [mmkn] f-[AstxdAm] [jhAz qyAs AlDgT] [hl] [انت] [فاهم] [كيف] [عمل] [جهاز قياس الضغط] [؟] [Ant] [fAhm] [kyf] [Em] [jhAz qyAs AlDgT] [?]</p>
427-Val	<p>يبدأ الجهاز الهضمي من الفم ybd>AljhAz AlhDmy mn Alfm [الجهاز الهضمي] [فبداية] [من] [الفم] [AljhAz AlhDmy] f-[bdAyp] [mn] [Alfm] [الجهاز الهضمي] [بداية] [من] [الفم] [AljhAz AlhDmy] [bdAyp] [mn] [Alfm]</p>
428-Val	<p>سيعطيك الدكتور إبر للعمود الفقري syETyk Aldktwr <br lEmwd Alfqry [قريباً] [الطبيب] [فأعطى] [لك] [إبرة] ++ [السبب] [العمود الفقري] [qrybA] [AlTbyb] f-[AETY] [lk] [<brp]++ [Alsbb] [AlEmwd Alfqry] [طبيب] [فأعطى] [لك] [إبرة] ++ [العمود الفقري] [Tbyb] f-[AETY] [lk] [Abrp]++ [AlEmwd Alfqry]</p>
429-Val	<p>تناول الكبسولة قبل الفطار</p>

	<p>tnAwl Alkbswlp qbl AlfTAr</p> <p>[فطور] [قبل] [أنت] [لازم] [فأخذ] [كبسولة]</p> <p>[fTwr] [qbl] [>nt] [lAzm] f->x* [kbswlp]</p> <p>[لازم] [فأخذ] [دواء] [قبل] [الفطور]</p> <p>[lAzm] f->x* [dwA'] [qbl] [AlfTwr]</p>
430-Val	<p>طول الأمعاء الدقيقة بين ه و ٧ أمتار</p> <p>Twl Al>mEA' Aldqyqp byn 5 w 7 >mtAr</p> <p>[الأمعاء الدقيقة] [طول] [بين] [ه] [و] [٧] [متر]</p> <p>[Al>mEA' Aldqyqp] [Twl] [byn] [5] [w] [7] [mtr]</p> <p>[الأمعاء الغليظة] [طول] [يساوي] [ه] [و] [٧] [متر]</p> <p>[Al>mEA' AlglyZp] [Twl] [ysAwy] [5] [w] [7] [mtr]</p>
431-Val	<p>أمراض الأمعاء الغليظة قليلة</p> <p>>mrAD Al>mEA' AlglyZp qllylp</p> <p>[مرض] ++ [الأمعاء الغليظة] [قليل]</p> <p>[mrD] ++ [Al>mEA' AlglyZp] [qllyl]</p> <p>[مرض] ++ [السبب] [امعاء غليظة] [قليل]</p> <p>[mrD] ++ [Alsbb] [AmEA' glyZp] [qllyl]</p>
432-Val	<p>يتطور التهاب البنكرياس إلى سرطان</p> <p>ytTwr AlthAb AlbnkryAs <1Y srTAN</p> <p>[التهاب] [البنكرياس] [فتحول] [إلى] [سرطان]</p> <p>[AlthAb] [AlbnkryAs] f-[tHwl] [<1Y] [srTAN]</p> <p>[التهاب] [البنكرياس] [ربما] [فمتطور] [سرطان]</p> <p>[AlthAb] [AlbnkryAs] [rbmA] f-[tTwr] [srTAN]</p>
433-Val	<p>يتسبب الإدمان في زيادة نبضات القلب</p> <p>ytsbb Al<dmAn fy zyAdp nbDAAt Alqlb</p> <p>[الإدمان] [مسئول] [نبض القلب] [زيادة]</p> <p>[Al<dmAn] [ms}wl] [nbD Alqlb] [zyAdp]</p> <p>[الإدمان] [مسئول] [نبض قلب] [كثير]</p> <p>[Al<dmAn] [ms}wl] [nbD qlb] [kvyr]</p>
434-Val	<p>يرتبط الإدمان بمرض نقص المناعة</p> <p>yrtbT Al<dmAn bmrD nqS AlmnAEp</p> <p>[الإدمان] [علاقة] [مرض] [نقص المناعة]</p> <p>[Al<dmAn] [ElAqp] [mrD] [nqS AlmnAEp]</p> <p>[الإدمان] [فمتسبب] [مرض] [نقص المناعة]</p> <p>[Al<dmAn] f-[sbb] [mrD] [nqS AlmnAEp]</p>
435-Val	<p>يقدم المستشفى خدماته للمعاقين</p> <p>yqdm Almst\$fY xdmAth llmEAqyn</p>

	<p>المستشفى] ف]اعطى] [خدمة] ++ [معاق] ++ [Almst\$fY] f-[AETy] [xdmp] ++ [mEAq] ++ المستشفى] [مسئول] [عمل] [خدمة] [معاق] [Almst\$fY] [ms}wl] [Eml] [xdmp] [mEAq]</p>
436-Val	<p>يقلل لقاح الأطفال من الإعاقة yql lqAH Al>TfAl mn Al<EAqp [لقاح] [طفل] ف]نقص] [إعاقة] [lqAH] [Tfl] f-[nqS] [<EAqp] ف]عمل] [تلقيح] [طفل] ف]حفظ] [طفل] [اعاقه] f-[Eml] [tlqyH] [Tfl] f-[HfZ] [Tfl] [AEAqh]</p>
437-Val	<p>المنغولي هو أحد أنواع الإعاقة الذهنية Almngwly hw >Hd >nwAE Al<EAqp Al*hnyp [المنغولي] [نوع] [إعاقة ذهنية] [Almngwly] [nwE] [<EAqp *hnyp] [المنغولي] [نوع] [اعاقه ذهنية] [Almngwly] [nwE] [AEAqh *hnyp]</p>
438-Val	<p>هل يعاني أحد أفراد الأسرة من إعاقة سمعية؟ hl yEAny >Hd >frAd Al>srp mn <EAqp smEyp? [؟] [شخص] [في] [الاسرة] [مريض] [إعاقة سمعية] [هل] [?] [\$xS] [fy] [AlAsrp] [mryD] [<EAqp smEyp] [hl] [هل] [موجود] [في] [الاسرة] [شخص] [إعاقة سمعية] [؟] [hl] [mwjwd] [fy] [AlAsrp] [\$xS] [<EAqp smEyp] [?]</p>
439-Val	<p>اذهب إلى المختبر لعمل قياس السمع A*hb <ly Almxtbr lEml qyAs AlsmE [أنت] ف]ذهاب] [إلى] [المختبر] [السبب] [عمل] [قياس] [السمع] [>nt] f-[*hAb] [<ly] [Almxtbr] [Alsbb] [Eml] [qyAs] [AlsmE] [أنت] ف]ذهاب] [إلى] [المختبر] [السبب] ف]عمل] [قياس] [سمع] [Ant] f-[*hAb] [AlY] [Almxtbr] [Alsbb] f-[Eml] [qyAs] [smE]</p>
440-Val	<p>انتشرت البكتيريا عبر الجرح Ant\$rt AlbktyryA Ebr AljrH [قبل] [البكتيريا] ف]نشر] [من] [الجرح] [qbl] [AlbktyryA] f-[n\$r] [mn] [AljrH] [قبل] [بكتريا] ف]نشر] [داخل] [الجرح] [qbl] [bktryA] f-[n\$r] [dAxl] [AljrH]</p>
441-Val	<p>يأخذ المريض إبرة السكري الآن y>x* AlmryD <brp Alskry Al>n</p>

	<p>[الآن] [مريض] ف[أخذ] [إبرة] [السكري] [Al>n] [mryD] f->x*] [<brp] [Alskry] [الآن] [مريض] ف[معمل] [إبرة] [السكري] [AlAn] [mryD] f-[Eml] [Abrp] [Alskry]</p>
442-Val	<p>أريد أن أخذ إبرة في الوريد >ryd >n >x* <brp fy Alwryd [أنا] ف[إرادة] ف[أخذ] [إبرة] [في] [الوريد] [>nA] f-[ArAdp] f->x*] [<brp] [fy] [Alwryd] [أنا] ف[إرادة] ف[أخذ] [إبرة] [في] [الوريد] [>nA] f-[ArAdp] f->x*] [<brp] [fy] [Alwryd]</p>
443-Val	<p>هل تعرضت لأزمة قلبية من قبل؟ hl tErDt l>zmp qlbyp mn qbl? [؟] [قبل] [أنت] ف[إصابة] [أزمة قلبية] [?] [qbl] [>nt] f-[ASAbp] [>zmp qlbyp] [أنت] [في] [قبل] [أزمة قلبية؟] [Ant] [fy] [qbl] [Azmp qlbyp?]</p>
444-Val	<p>تؤدي الأزمة القلبية إلى الموت t&dy Al>zmp Alqlbyp <IY Almwt [أزمة قلبية] [يمكن] ف[سبب] [موت] [>zmp qlbyp] [mmkn] f-[sbb] [mwt] [أزمة] [قلبية] ف[سبب] [موت] [Azmp] [qlbyp] f-[sbb] [mwt]</p>
445-Val	<p>ترتبط الأزمة القلبية بالسكتة القلبية trtbT Al>zmp Alqlbyp bAlsktp Alqlbyp [الأزمة القلبية] [علاقة] [السكتة القلبية] [Al>zmp Alqlbyp] [ElAqp] [Alsktp Alqlbyp] [الأزمة القلبية] [في] [علاقة] [مع] [السكتة القلبية] [AlAzmp Alqlbyp] [fy] [ElAqp] [mE] [Alskth Alqlbyp]</p>
446-Val	<p>أعطاني الطبيب دواء للأزمة القلبية >ETAny AlTbyb dwA' ll>zmp Alqlbyp [قبل] [الطبيب] ف[إعطاء] [أنا] [علاج] [الأزمة القلبية] [qbl] [AlTbyb] f-[AETA'] [>nA] [ElAj] [Al>zmp Alqlbyp] [قبل] [طبيب] ف[كتب] [أنا] [دواء] [أزمة قلبية] [qbl] [Tbyb] f-[ktb] [AnA] [dwA'] [Azmp qlbyp]</p>
447-Val	<p>سأذهب إلى مستشفى آخر للعلاج</p>

	<p>s>*hb <IY mst\$fY >xr lElAj</p> <p>[قريباً] [أنا] [ف]ذهاب [إلى] [مستشفى] [ثاني] [السبب] [علاج]</p> <p>[qrybA] [>nA] f-[*hAb] [<IY] [mst\$fY] [vAny] [Alsbb] [ElAj]</p> <p>[قريباً] [أنا] [ف]ذهاب [مستشفى] [آخر] [علاج]</p> <p>[qrybA] [AnA] f-[*hAb] [mst\$fY] [Axr] [ElAj]</p>
448-Val	<p>لا أعاني من ورم الأنسجة</p> <p>lA >EAny mn wrm Al>nsjp</p> <p>[أنا] [مريض] [لا] [ورم] [أنسجة]</p> <p>[>nA] [mryD] [lA] [wrm] [>nsjp]</p> <p>[أنا] [ف]وجود [لا] [ورم] [أنسجة]</p> <p>[AnA] f-[wjwd] [lA] [wrm] [Ansjp]</p>
449-Val	<p>تقوم الأنسجة بنبضات القلب</p> <p>tqwm Al>nsjp bnbDA t Alqlb</p> <p>[الأنسجة] [ف]عمل [نبض القلب]</p> <p>[Al>nsjp] f-[Eml] [nbD Alqlb]</p> <p>[الأنسجة] [ف]عمل [نبض القلب]</p> <p>[AlAnsjp] f-[Eml] [nbD Alqlb]</p>
450-Val	<p>يوجد لديك بكتيريا في الكبد</p> <p>ywjd ldyk bktyryA fy Alkbd</p> <p>[أنت] [موجود] [بكتيريا] [في] [الكبد]</p> <p>[>nt] [mwjwd] [bktyryA] [fy] [Alkbd]</p> <p>[أنت] [في] [بكتيريا] [في] [الكبد]</p> <p>[Ant] [fy] [bktryA] [fy] [Alkbd]</p>
451-Val	<p>ليست كل أنواع البكتيريا ضارة</p> <p>lyst kl >nwAE AlbktyryA DArp</p> <p>[كل] [نوع] [البكتيريا] [ضار] [لا]</p> <p>[kl] [nwE] [AlbktyryA] [DAr] [lA]</p> <p>[بكتيريا] [كل] [ضار] [لا]</p> <p>[bktryA] [kl] [DAr] [lA]</p>
452-Val	<p>افتح فمك لكي أرى البلعوم</p> <p>AftH fmk lky >rY AlblEwm</p> <p>[أنت] [فم] [ف]فتح [السبب] [أنا] [يرى] [البلعوم]</p> <p>[>nt] [fm] f-[ftH] [Alsbb] [AnA] f-[yrY] [AlblEwm]</p> <p>[أنت] [ف]فتح [الفم] [أنا] [يرى] [البلعوم]</p> <p>[Ant] f-[ftH] [Alfm] [AnA] [yrY] [AlblEwm]</p>
453-Val	<p>نتائج تحليل الدم إيجابية</p>

	<p>ntA}j tHlyl Aldm <yjAby [نتيجة][++][تحليل الدم][إيجابي] [ntyjp][++][tHlyl Aldm][<yjAby] [تحليل الدم][انت][إيجابي] [tHlyl Aldm][Ant][<yjAby]</p>
454-Val	<p>تحتاج إلى تحليل طبي شامل tHtAj <IY tHlyl Tby \$Aml [أنت][لازم][تحليل طبي][شامل] [>nt][lAzm][tHlyl Tby][\$Aml] [لازم][انت][فمعمل][فخص طبي][شامل] [lAzm][Ant]f-[Eml][fHS Tby][\$Aml]</p>
455-Val	<p>أجريت تحليل طبي الأسبوع الماضي >jryt tHlyl Tby Al>sbwE AlmADy [الأسبوع][قبل][أنا][فمعمل][تحليل طبي] [Al>sbwE][qbl][>nA]f-[Eml][tHlyl Tby] [أنا][فمعمل][فخص طبي][أسبوع][قبل] [AnA]f-[Eml][fHS Tby][>sbwE][qbl]</p>
456-Val	<p>يحتاج ابنك إلى لقاح الشلل yHtAj Abnk <IY lqAH Al\$ll [أنت][ابن][لازم][فمعمل][لقاح][الشلل] [>nt][Abn][lAzm]f-[Eml][lqAH][Al\$ll] [انت][ابن][لازم][فمعمل][لقاح][شلل][اطفال] [Ant][Abn][lAzm]f-[Eml][lqAH][\$ll][ATfAl]</p>
457-Val	<p>يرتبط التوحد بالوراثة yrtbT AltwHd bAlwrAvp [التوحد][علاقة][الوراثة] [AltwHd][ElAqp][AlwrAvp] [التوحد][علاقة][وراثة] [AltwHd][ElAqp][wrAvp]</p>
458-Val	<p>تتسبب الجروح في دخول البكتيريا ttsbb AljrwH fy dxwl AlbktyryA [جرح][++][سبب][البكتيريا][دخول] [jrH][++]f-[sbb][AlbktyryA][dxwl] [جرح][مسئول][دخول][البكتيريا][الى][الجسم] [jrH][ms}wl][dxwl][AlbktyryA][AlY][Aljsm]</p>
459-Val	<p>اربط الجرح بالشاش ArbT AljrH bAl\$A\$</p>

	<p>[أنت] [فربط] [الجرح] [الشاش] [>nt] f-[rbT] [AljrH] [Al\$A\$] [لازم] [فربط] [الجرح] [الشاش] [lAzm] f-[rbT] [AljrH] [Al\$A\$]</p>
460-Val	<p>يجب تعقيم الجرح yjb tEqym AljrH [لازم] [جرح] [فتعقيم] [lAzm] [jrH] f-[tEqym] [لازم] [فتعقيم] [الجرح] [lAzm] f-[tEqym] [AljrH]</p>
461-Val	<p>يوجد جرح في اللثة ywj d jrH fy Allvp [جرح] [في] [اللثة] [فموجود] [jrH] [fy] [Allvp] f-[mwjwd] [أنت] [في] [جرح] [في] [اللثة] [Ant] [fy] [jrH] [fy] [Allvp]</p>
462-Val	<p>الجرح ناتج عن خلع الضرس AljrH nAtj En xlE AlDrs [الجرح] [السبب] [إزالة] [الضرس] [AljrH] [Alsbb] [<zAlp] [AlDrs] [الجرح] [السبب] [خلع] [ضرس] [AljrH] [Alsbb] [xlE] [Drs]</p>
463-Val	<p>أحرص على عدم تلوث الجرح AHrS ElY Edm tlvv AljrH [أنت] [لازم] [جرح] [تلوث] [لا] [Ant] [lAzm] [jrH] [tlvv] [lA] [لازم] [انتباه] [ممنوع] [تلوث] [الجرح] [lAzm] [AntbAh] [mmnwE] [tlvv] [AljrH]</p>
464-Val	<p>تحتوي الجمجمة على الدماغ tHtwy Alj m jmp ElY AldmAg [الجمجمة] [فحوى] [الدماغ] [Alj m jmp] f-[HwY] [AldmAg] [الدماغ] [موجود] [داخل] [الجمجمة] [AldmAg] [mwjwd] [dAxl] [Alj m jmp]</p>
465-Val	<p>يسبب التدخين مشاكل للجهاز التنفسي ysbb Altdxyn m\$Akl lljhAz Altnfsy [التدخين] [فيسبب] [مشكلة] ++ [الجهاز التنفسي] [Altdxyn] f-[sbb] [m\$klp] ++ [AljhAz Altnfsy]</p>

	<p>[تدخين] [مسئول] [مشاكل] [جهاز تنفسي]</p> <p>[tdxyn] [ms}wl] [m\$Akl] [jhAz tnfsy]</p>
466-Val	<p>لديك مشاكل في جهاز التنفس</p> <p>ldyk m\$Akl fy jhAz Altnfs</p> <p>[أنت] [في] [مشكلة] ++ [في] [الجهاز التنفسي]</p> <p>[>nt] [fy] [m\$klp] ++ [fy] [AljhAz Altnfsy]</p> <p>[أنت] [في] [مشكلة] [الجهاز التنفسي]</p> <p>[Ant] [fy] [m\$klp] [AljhAz Altnfsy]</p>
467-Val	<p>يتكون الجهاز التنفسي من الرئتان والأنف</p> <p>ytkwn AljhAz Altnfsy mn Alr}tAn wAl>nf</p> <p>[الجهاز التنفسي] [ف] [تكون] [من] [الرئتان] [و] [الأنف]</p> <p>[AljhAz Altnfsy] f-[tkwn] [mn] [Alr}tAn] [w] [Al>nf]</p> <p>[الجهاز التنفسي] [ف] [تكون] [من] [رئتان] [و] [أنف]</p> <p>[AljhAz Altnfsy] f-[tkwn] [mn] [r}tAn] [w] [Anf]</p>
468-Val	<p>تؤثر الإصابة على الجهاز العصبي</p> <p>t&vr Al<SAbp EIY AljhAz AIESby</p> <p>[الإصابة] [ف] [تأثير] [على] [الجهاز العصبي]</p> <p>[Al<SAbp] f-[t>vyr] [EIY] [AljhAz AIESby]</p> <p>[الإصابة] [في] [ف] [تأثير] [الجهاز العصبي]</p> <p>[Al<SAbp] [fy] f-[t>vyr] [AljhAz AIESby]</p>
469-Val	<p>جهاز قياس الضغط المنزلي غير دقيق</p> <p>jhAz qyAs AlDgT Almnzly gyr dqyq</p> <p>[جهاز قياس الضغط] [البيت] [غير] [دقيق]</p> <p>[jhAz qyAs AlDgT] [Albyt] [gyr] [dqyq]</p> <p>[جهاز قياس الضغط] [البيت] [ليس] [مضبوط] [صح]</p> <p>[jhAz qyAs AlDgT] [Albyt] [lys] [mDbwT] [SH]</p>
470-Val	<p>أين يوجد قسم الحروق؟</p> <p>>yn ywjd qsm AlHrwq?</p> <p>[?] [ف] [وجود] [قسم] [الحروق] [أين]</p> <p>[?] f-[wjwd] [qsm] [AlHrwq] [>yn]</p> <p>[أين] [مكان] [قسم] [الحروق] [؟]</p> <p>[>yn] [mkAn] [qsm] [AlHrwq] [?]</p>
471-Val	<p>الأطفال أكثر عرضة للحروق</p> <p>Al>TfAl >kvr ErDp llHrwq</p> <p>[الطفل] ++ [حروق] [سريع]</p> <p>[AlTfl] ++ [Hrwq] [sryE]</p>

	<p>[طفل] [ف] [حرق] [سريع]</p> <p>[Tfl] f-[Hrq] [sryE]</p>
472-Val	<p>هل يؤلمك الحرق؟</p> <p>hl y&lmk AlHrq?</p> <p>[?] [أنت] [ف] [ألم] [حرق] [هل]</p> <p>[?] [>nt] f-[>lm] [Hrq] [hl]</p> <p>[أنت] [في] [ألم] [السبب] [الحرق] [؟]</p> <p>[Ant] [fy] [Alm] [Alsbb] [AlHrq] [?]</p>
473-Val	<p>حككت جلدي بقوة</p> <p>Hkkt jldy bqwp</p> <p>[قبل] [أنا] [ف] [بك] [جلد] [قوة]</p> <p>[qbl] [>nA] f-[Hk] [jld] [qwp]</p> <p>[أنا] [ف] [بك] [جلدي] [قوي]</p> <p>[AnA] f-[Hk] [jldy] [qwy]</p>
474-Val	<p>لا تحك منطقة الجرح</p> <p>lA tHk mnTqp AljrH</p> <p>[أنت] [ف] [بك] [الجرح] [لا]</p> <p>[>nt] f-[Hk] [AljrH] [lA]</p> <p>[ممنوع] [ف] [بك] [مكان] [الجرح]</p> <p>[mmnwE] f-[Hk] [mkAn] [AljrH]</p>
475-Val	<p>الإحساس هو أحد الحواس الخمس</p> <p>Al<HsAs hw >Hd AlHwAs Alxms</p> <p>[الإحساس] [من] [الحواس الخمس]</p> <p>[Al<HsAs] [mn] [AlHwAs Alxms]</p> <p>[الإحساس] [من] [الحواس الخمس]</p> <p>[Al<HsAs] [mn] [AlHwAs Alxms]</p>
476-Val	<p>تناول جرعة من الدواء كل يوم</p> <p>tnAwl jrEp mn AldwA' kl ywm</p> <p>[أنت] [ف] [أكل] [دواء] [كل] [يوم]</p> <p>[Ant] f-[Akl] [dwA'] [kl] [ywm]</p> <p>[أنت] [لأزم] [ف] [أخذ] [دواء] [كل] [يوم]</p> <p>[Ant] [lAzm] f-[Ax*] [dwA'] [kl] [ywm]</p>
477-Val	<p>يكثر استخدام المناديل عند الزكام</p> <p>ykvr AstxdAm AlmnAdyl End AlzkAm</p> <p>[مناديل] [ف] [استخدام] [كثير] [عند] [الزكام]</p> <p>[mnAdyl] f-[AstxdAm] [kvyr] [End] [AlzkAm]</p> <p>[مناديل] [ف] [استخدام] [كثير] [عند] [زكام]</p>

	[mnAdyl] f-[AstxdAm] [kvyr] [End] [zkAm]
478-Val	لا يوجد دواء للزكام lA ywjd dwA' llzkAm [زكام] [علاج] [فوجود] [لا] [zkAm] [ElAj] f-[wjwd] [lA] [زكام] [دواء] [فوجود] [لا] [zkAm] [dwA'] f-[wjwd] [lA]
479-Val	تحدث السكتة القلبية فجأة tHdv Alsktp Alqlbyp fj>p [السكتة القلبية] [فحدث] [فجأة] [Alsktp Alqlbyp] f-[Hdv] [fj>p] [السكتة القلبية] [فجأة] [Alsktp Alqlbyp] [fj>p]
480-Val	سماعة أذنك لا تعمل smAEp >*nk lA tEml [أنت] [سماعة أذن] [عمل] [لا] [>nt] [smAEp >*n] [Eml] [lA] [انت] [سماعة اذن] [عمل] [لا] [Ant] [smAEh A*n] [Eml] [lA]
481-Val	يوجد قيح حول الشريط اللاصق ywjd qyH Hwl Al\$ryT AllASq [قيح] [فموجود] [حول] [الشريط اللاصق] [qyH] f-[mwjwd] [Hwl] [Al\$ryT AllASq] [في] [قيح] [حول] [الشريط اللاصق] [fy] [qyH] [Hwl] [Al\$ryT AllASq]
482-Val	يسبب الشلل الدماغي الشلل النصفي ysbb Al\$ll AldmAgY Al\$ll AlnSfy [الشلل الدماغي] [سبب] [الشلل النصفي] [Al\$ll AldmAgY] [sbb] [Al\$ll AlnSfy] [الشلل الدماغي] [سبب] [شلل نصفي] [Al\$ll AldmAgY] [sbb] [\$ll nSfy]
483-Val	أنت مصاب بشلل نصفي >nt mSAb b\$ll nSfy [أنت] [مرض] [شلل نصفي] [>nt] [mrD] [\$ll nSfy] [انت] [في] [شلل نصفي]

	[Ant] [fy] [\$ll nSfy]
484-Val	<p>أعاني من صداع شديد >EAny mn SdAE \$dyd [أنا] [مشكلة] [صداع] [قوي] [>nA] [m\$klp] [SdAE] [qwy] [أنا] [في] [صداع] [شديد] [AnA] [fy] [SdAE] [\$dyd]</p>
485-Val	<p>وصف لك الدكتور حبوب للصداع wSf lk Aldktwr Hbwb llSdAE [قبل] [الطبيب] ف[كتب] [لك] [حبة] ++ [السبب] [الصداع] [qbl] [AlTbyb] f-[ktb] [lk] [Hbp]++ [Alsbb] [AlSdAE] [طبيب] ف[كتب] [لك] [حبة] ++ [الصداع] [Tbyb] f-[ktb] [lk] [Hbp]++ [AlSdAE]</p>
486-Val	<p>طلب الطبيب إحضار صور الأشعة Tlb AlTbyb <HDAr Swr Al>\$Ep [قبل] [الطبيب] ف[طلب] ف[إحضار] [صورة أشعة] ++ [qbl] [AlTbyb] f-[Tlb] f- [<HDAr] [Swrp >\$Ep]++ [طبيب] ف[طلب] ف[إحضار] [صورة أشعة] [Tbyb] f-[Tlb] f- [<HDAr] [Swrp A\$Ep]</p>
487-Val	<p>لا يوجد هذا الدواء في الصيدلية lA ywjd h*A AldwA' fy AlSydlyp [هذا] [العلاج] [في] [الصيدلية] ف[وجود] [لا] [h*A] [AlElAj] [fy] [AlSydlyp] f-[wjwd] [lA] [هذا] [دواء] [صيدلية] ف[وجود] [لا]</p>
488-Val	<p>تحتوي الصيدلية على أدوية tHtwy AlSydlyp ElY >dwyp ++ [الصيدلية] [داخل] [في] [علاج] ++ [AlSydlyp] [dAxl] [fy] [ElAj]++ ++ [الصيدلية] [داخل] [في] [دواء] ++ [AlSydlyp] [dAxl] [fy] [dwA']++</p>
489-Val	<p>تموت الأعصاب عند الإعاقة tmwt Al>ESAb End Al<EAqp [عصب] ++ ف[موت] [سبب] [الإعاقة] [ESb]++ f-[mwt] [sbb] [Al<EAqp] [عصب] ف[موت] [السبب] [إعاقه] [ESb] f-[mwt] [Alsbb] [AEAqh]</p>
490-Val	<p>هل تستطيع تحريك عصب اليد؟</p>

	<p>hl tstTyE tHryk ESb Alyd?</p> <p>[؟] [أنت] [ممكن] [فحركة] [عصب] [اليد] [هل]</p> <p>[?] [>nt] [mmkn] f-[Hrkp] [ESb] [Alyd] [hl]</p> <p>[أنت] [ممكن] [فحركة] [عصب] [يد] [؟]</p> <p>[Ant] [mmkn] f-[Hrkp] [ESb] [yd] [?]</p>
491-Val	<p>لا تحتوي الجمجمة على عضلات</p> <p>lA tHtwy Aljmjmp ElY EDlAt</p> <p>[الجمجمة] [داخل] [عضلة] ++ [لا]</p> <p>[Aljmjmp] [dAxl] [EDlp] ++ [lA]</p> <p>[الجمجمة] [فيوجد] [لا] [عضلة]</p> <p>[Aljmjmp] f-[ywj] [lA] [EDlp]</p>
492-Val	<p>يسبب تمزق العضلات ألم شديد</p> <p>ysbb tmzq AlEDlAt >lm \$dyd</p> <p>[العضلة] ++ [تقطع] [فيسبب] [ألم] [قوي]</p> <p>[AlEDlp] ++ [tqTE] f-[sbb] [>lm] [qwy]</p> <p>[تمزق] [العضلات] [فمسؤول] [ألم] [شديد]</p> <p>[tmzq] [AlEDlAt] f-[ms}wl] [Alm] [\$dyd]</p>
493-Val	<p>أي مكان يؤلمك في العمود الفقري؟</p> <p>>y mkAn y&lmk fy AlEmwd Alfqry?</p> <p>[؟] [أنت] [ألم] [في] [العمود الفقري] [أين] [هنا] [أم] [هنا]</p> <p>[?] [>nt] [>lm] [fy] [AlEmwd Alfqry] [>yn] [hnA] [>m] [hnA]</p> <p>[أنت] [أين] [ألم] [في] [العمود الفقري] [؟]</p> <p>[Ant] [Ayn] [Alm] [fy] [AlEmwd Alfqry] [?]</p>
494-Val	<p>تمتد القصبة الهوائية إلى الرئتين</p> <p>tmtD AlqSbp Alhwa}yp <ly Alr}tyn</p> <p>[القصبة الهوائية] [فامتد] [إلى] [الرئتان]</p> <p>[AlqSbp Alhwa}yp] f-[AmtD] [<ly] [Alr}tAn]</p> <p>[القصبة الهوائية] [فامتد] [إلى] [الرئتان]</p> <p>[AlqSbp Alhwa}yp] f-[AmtD] [AlY] [Alr}tAn]</p>
495-Val	<p>تسبب الحادث في كسر القفص الصدري</p> <p>tsbb AlHAdv fy ksr AlqfS AlSdry</p> <p>[قبل] [الحادث] [فيسبب] [كسر] [القفص الصدري]</p> <p>[qbl] [AlHAdv] f-[sbb] [ksr] [AlqfS AlSdry]</p> <p>[حادث] [فيسبب] [كسر] [القفص الصدري]</p> <p>[HAdv] f-[sbb] [ksr] [AlqfS AlSdry]</p>
496-Val	<p>يختص طبيب القلب بأمراض القلب</p> <p>yxtS Tbyb Alqlb b>mrAD Alqlb</p>

	<p>[طبيب] [القلب] [مسؤول] [مرض] ++ [القلب] [Tbyb] [Alqlb] [ms&l] [mrD] ++ [Alqlb] [طبيب] [القلب] [مسؤول] [مرض] [القلب] [Tbyb] [Alqlb] [ms&l] [mrD] [Alqlb]</p>
497-Val	<p>للقلب وظائف كثيرة llqlb wZA}f kvyrp ++ [القلب] [في] [وظيفة] ++ [Alqlb] [fy] [wZyfp] ++ ++ [القلب] [في] [عمل] ++ [Alqlb] [fy] [Eml] ++</p>
498-Val	<p>نبضات قلبك سريعة nbDAAt qlbk sryEp [أنت] [نبض القلب] [سريع] [>nt] [nbD Alqlb] [sryE] [أنت] [نبض قلب] [سريع] [Ant] [nbD qlb] [sryE]</p>
499-Val	<p>المريض مصاب بمرض الكبد AlmryD mSAb bmrD Alkbd [المريض] [مصاحب] [مرض] [الكبد] [AlmryD] [mSAb] [mrD] [Alkbd] [مريض] [في] [مرض] [الكبد] [mryD] [fy] [mrD] [Alkbd]</p>
500-Val	<p>تحفظ الكبسولة في مكان بارد tHfZ Alkbswlp fy mkAn bArd [الكبسولة] [فـ] [تحفظ] [مكان] [بارد] [Alkbswlp] f-[HfZ] [mkAn] [bArd] [لازم] [فـ] [تحفظ] [دواء] [في] [الثلاجة] [lAzm] f-[HfZ] [dwA'] [fy] [AlvlAjp]</p>
501-Val	<p>تساعد الكبسولات على هضم الطعام tsAEd Alkbswlat EIY hDm AlTEAm [الكبسولة] ++ [فـ] [مساعدة] [هضم] [الطعام] [Alkbswlp] ++ f-[msAEdp] [hDm] [AlTEAm] [كبسولات] [فـ] [مساعدة] [هضم] [طعام] [kbswlat] f-[msAEdp] [hDm] [TEAm]</p>
502-Val	<p>تعتبر المهدات من المخدرات tEtbr AlmhdAt mn AlmxdAt [المهدئ] ++ [مثل] [المخدرات] [Almhd]} ++ [mvl] [AlmxdAt]</p>

	<p>[المهدئ][++][نفس][مخدرات] [Almhd}][++][nfs][mxdrAt]</p>
503-Val	<p>تتسبب المخدرات بمرض الكبد ttsbb AlmxdraT bmrD Alkbd [المخدرات][ف][سبب][مرض][الكبد] [AlmxdraT] f-[sbb] [mrD] [Alkbd] [مخدرات][ف][سبب][مرض][الكبد] [mxdraT] f-[sbb] [mrD] [Alkbd]</p>
504-Val	<p>يتم اكتشاف الإيدز بفحص الدم ytm Akt\$Af Al<ydz bfHS Aldm [معرفة][الإيدز][فحص][الدم] f-[mErfp] [Al<ydz] [fHS] [Aldm] [ايدز][ف][كشف][فحص][الدم] [Aydz] f-[k\$f] [fHS] [Aldm]</p>
505-Val	<p>شفي المريض من الورم \$fy AlmryD mn Alwrm [قبل][المريض][ف][عافية][من][الورم] [qbl] [AlmryD] f-[EAfyp] [mn] [Alwrm] [مريض][ف][شفاء][من][الورم] [mryD] f-[\$fA'] [mn] [Alwrm]</p>
506-Val	<p>سيتعافى المصاب من الجرح قريباً syTEAfY AlmSAb mn AljrH qrybA [قريباً][مريض][ف][عافية][من][الجرح] [qrybA] [mryD] f-[EAfyp] [mn] [AljrH] [قريباً][مريض][جرح][ف][عافية] [qrybA] [mryD] [jrH] f-[EAfyp]</p>
507-Val	<p>شفي المريض من الشلل النصفي \$fy AlmryD mn Al\$ll AlnSfy [قبل][المريض][ف][عافية][من][الشلل النصفي] [qbl] [AlmryD] f-[EAfyp] [mn] [Al\$ll AlnSfy] [مريض][ف][شفاء][من][الشلل النصفي] [mryD] f-[\$fA'] [mn] [Al\$ll AlnSfy]</p>
508-Val	<p>مناعة المصاب ضعيفة mnAEp AlmSAb DEyfp [مناعة][المصاب][ضعيف] [mnAEp] [AlmSAb] [DEyf] [مناعة][المصاب][ضعيف]</p>

	[mnAEp] [AlmSAb] [DEyf]
509-Val	يزيد الغذاء الجيد المناعة zyzd Alg*A' Aljyd AlmnAEp [اكل] [جيد] [فزيادة] [المناعة] [Akl] [jyd] f-[zyAdp] [AlmnAEp] [اكل] [تمام] [مناعة] [قوة] [Akl] [tmAm] [mnAEp] [qwp]
510-Val	يحتاج المصاب بالمنغولي إلى اهتمام yHtAj AlmSAb bAlmngwly <IY AhtmAm [مريض] [منغولي] [فإحاجة] [رعاية] [mryD] [mngwly] f-[HAjp] [rEAyp] [مصاب] [المنغولي] [فإحاجة] [اهتمام] [mSAb] [Almngwly] f-[HAjp] [AhtmAm]
511-Ts	أصببت البنت بإعاقه سمعية فجأة >Sybt Albnt b<EAqp smEyp fjA'p [قبل] [البنت] [فإصابة] [إعاقه سمعية] [فجأة] [qbl] [Albnt] f-[ASAbp] [<EAqp smEyp] [fj>p] [قبل] [البنت] [فجأة] [إعاقه سمعية] [qbl] [Albnt] [fj>p] [AEAqp smEyp]
512-Ts	التطعيم يمنع انتشار شلل الأطفال AltTEym ymnE Ant\$Ar \$ll Al>TfAl [التطعيم] [فمنع] [انتشار] [شلل] [طفل]++ [AltTEym] f-[mnE] [Ant\$Ar] [\$ll] [Tfl]++ [التطعيم] [فوقوف] [انتشار] [شلل] [طفل]++ [AltTEym] f-[wqf] [Ant\$Ar] [\$ll] [Tfl]++
513-Ts	سينتشر السم في جسمك بعد ساعة synt\$R Alsm fy jsmk bEd sAEp [بعد] [ساعة] [السم] [فانتشار] [في] [أنت] [جسم] [bEd] [sAEp] [Alsm] f-[Ant\$Ar] [fy] [>nt] [jsm] [السم] [فانتشار] [داخل] [أنت] [جسم] [بعد] [ساعه] [Alsm] f-[Ant\$Ar] [dAxl] [Ant] [jsm] [bEd] [sAEh]
514-Ts	يمنع الكبد السم من الانتشار في الدم ymnE Alkbd Alsm mn AlAnt\$Ar fy Aldm [الكبد] [فوقوف] [السم] [انتشار] [في] [الدم] [Alkbd] f-[wqf] [Alsm] [Ant\$Ar] [fy] [Aldm] [الكبد] [وظيفة] [فوقوف] [انتشار] [السم] [في] [الدم] [Alkbd] [wZyfp] f-[wqf] [Ant\$Ar] [Alsm] [fy] [Aldm]

515-Ts	<p>اذهب إلى الطوارئ لأخذ الإبرة A*hb < Y AlTwAr} l>x* Al<brp [أنت] [فذهب] [إلى] [الطوارئ] [السبب] [فأخذ إبرة] [>nt] f-[*hb] [< Y] [AlTwAr}] [Alsbb] f-[>x* <brp] [انت] [فذهب] [إلى] [الطوارئ] [السبب] [فأخذ إبرة] [Ant] f-[*hb] [AlY] [AlTwAr}] [Alsbb] f-[Ax* Abrh]</p>
516-Ts	<p>يجب أخذ الإبر بشكل منتظم yjb >x* Al<br b\$kl mntZm [لازم] [فأخذ إبرة] [دائماً] [lAzm] f-[>x* <brp] [dA}mA] [لازم] [فأخذ إبرة] [وقت] [منتظم] [lAzm] f-[>x* Abrp] [wqt] [mntZm]</p>
517-Ts	<p>وصف الطبيب إبرتين في اليوم wSf AlTbyb <brtyn fy Alywm [قبل] [الطبيب] [فكتب] [إبرة] + [qbl] [AlTbyb] f-[ktb] [<brp] + [قبل] [دكتور] [فقال] [إبر] + [في] [اليوم] [qbl] [dktwr] f-[qAl] [Abr] + [fy] [Alywm]</p>
518-Ts	<p>أريد علاج للأزمة القلبية >ryd ElAj ll>zmp Alqlbyp [أنا] [فأرادة] [علاج] [الأزمة القلبية] [>nA] f-[ArAdp] [ElAj] [AlAzmp Alqlbyp] [انا] [فأرادة] [دواء] [الأزمة القلبية] [AnA] f-[ArAdp] [dwA'] [Al>zmp Alqlbyp]</p>
519-Ts	<p>سيتم إزالة الحصى باستخدام أشعة الليزر sytm <zAlp AlHSY bAstxdAm >\$Ep Allyzr [قريباً] [فعمل] [أشعة الليزر] [فإزالة] [الحصى] [qrybA] f-[Eml] [A\$Ep Alyzr] f-[<zAlp] [AlHSY] [قريباً] [حصى] [فإنظافة] [عمل] [أشعة الليزر] [qrybA] [HSY] f-[nZAfp] [Eml] [A\$Eh Alyzr]</p>
520-Ts	<p>نستخدم أشعة الليزر لفتح شرايين القلب nstxdm >\$Ep Allyzr lftH \$rAynn Alqlb [نحن] [فأستخدم] [أشعة الليزر] [السبب] [ففتح] [شريان] ++ [القلب] [nHn] f-[AstxdAm] [>\$Ep Allyzr] [Alsbb] f-[ftH] [\$ryAn] ++ [Alqlb] [نحن] [ففتح] [شريان] [القلب] [فعمل] [أشعة الليزر]</p>

	[nHn] f-[ftH] [\$ryAn] [Alqlb] f-[Eml] [A\$Eh Alyzr]
521-Ts	<p>أظهرت نتائج الفحوصات وجود بكتيريا</p> <p>>Zhrt ntA}j AlfHwSAw wjwd bktryA</p> <p>[نتيجة][+] [الفحص] [وجود] [بكتيريا]</p> <p>[ntyjp]++ [AlfHS] [wjwd] [bktryA]</p> <p>[فحص] [مختبر] [نتيجة] [بكتيريا] [موجود]</p> <p>[fHS] [mxtbr] [ntyjp] [bktryA] [mwjwd]</p>
522-Ts	<p>تسبب البكتيريا في الإسهال</p> <p>ttsbb AlbktryA fy Al<shAl</p> <p>[البكتيريا] [ف] [سبب] [الإسهال]</p> <p>[AlbktryA] f-[sbb] [Al<shAl]</p> <p>[بكتيريا] [مسئول] [إسهال]</p> <p>[bktryA] [ms}wl] [AshAl]</p>
523-Ts	<p>سنستخدم المجهر لاكتشاف البكتيريا</p> <p>snstxdm Almjhr lAkt\$Af AlbktryA</p> <p>[قريباً] [المجهر] [نحن] [ف] [استخدام] [سبب] [اكتشاف] [بكتيريا]</p> <p>[qrybA] [Almjhr] [nHn] f-[AstxdAm] [sbb] [Akt\$Af] [bktryA]</p> <p>[قريباً] [ف] [فحص] [بكتيريا] [عمل] [المجهر]</p> <p>[qrybA] f-[fHS] [bktryA] [Eml] [Almjhr]</p>
524-Ts	<p>يتسبب التدخين في سرطان البلعوم</p> <p>ytsbb Altdxyn fy srTAn AlblEwm</p> <p>[التدخين] [سبب] [سرطان] [البلعوم]</p> <p>[Altdxyn] [sbb] [srTAn] [AlblEwm]</p> <p>[التدخين] [مسئول] [سرطان] [البلعوم]</p> <p>[Altdxyn] [ms}wl] [srTAn] [AlblEwm]</p>
525-Ts	<p>يستخدم الدواء السائل لعلاج البلعوم</p> <p>ystxdm AldwA' AlsA}l lElAj AlblEwm</p> <p>[العلاج السائل] [ف] [استخدام] [السبب] [علاج] [البلعوم]</p> <p>[AlElAj AlsA}l] f-[AstxdAm] [Alsbb] [ElAj] [AlblEwm]</p> <p>[الدواء السائل] [علاج] [البلعوم]</p> <p>[AldwA' AlsA}l] [ElAj] [AlblEwm]</p>
526-Ts	<p>تحليل الدم مهم لمعرفة المرض</p> <p>tHlyl Aldm mhm lmErfp AlmrD</p> <p>[تحليل الدم] [مهم] [السبب] [معرفة] [المرض]</p> <p>[tHlyl Aldm] [mhm] [Alsbb] [mErfp] [AlmrD]</p> <p>[لازم] [تحليل الدم] [السبب] [معرفة] [المرض] [نوع]</p> <p>[lAzm] [tHlyl Aldm] [Alsbb] [mErfp] [AlmrD] [nwE]</p>
527-Ts	<p>أجريت تحليل دم وفحص الحمل</p>

	<p>>jryt tHlyl dm wfHS AlHml</p> <p>[قبل] [أنا] [فـعمل] [تحليل دم] [و] [فخص] [حمل]</p> <p>[qbl] [>nA] f-[Eml] [tHlyl dm] [w] [fHS] [Hml]</p> <p>[قبل] [فـعمل] [تحليل الدم] [و] [فخص] [حمل]</p> <p>[qbl] f-[Eml] [tHlyl Aldm] [w] [fHS] [Hml]</p>
528-Ts	<p>نتيجة تحليل الدم سليمة</p> <p>ntyjp tHlyl Aldm slymp</p> <p>[نتيجة] [تحليل الدم] [سليم]</p> <p>[ntyjp] [tHlyl Aldm] [slym]</p> <p>[تحليل دم] [جيد] [مرض] [يوجد] [لا]</p> <p>[tHlyl dm] [jyd] [mrD] [ywjd] [lA]</p>
529-Ts	<p>هل أجريت تحليل دم أمس؟</p> <p>hl >jryt tHlyl dm >ms?</p> <p>[؟] [أمس] [أنت] [فـعمل] [تحليل دم] [هل]</p> <p>[?] [>ms] [>nt] f-[Eml] [tHlyl dm] [hl]</p> <p>[؟] [أمس] [أنت] [فـعمل] [تحليل دم] [هل]</p> <p>[?] [Ams] [Ant] f-[Eml] [tHlyl dm] [hl]</p>
530-Ts	<p>يعطى التلقيح لكل الأطفال</p> <p>yETY AltlyqyH lkl Al>TfAl</p> <p>[التلقيح] [فـعطى] [كل] [طفل] ++</p> <p>[AltlyqyH] f-[ETY] [kl] [Tf] ++</p> <p>[تلقيح] [لازم] [كل] [طفل] ++</p> <p>[tlyqyH] [lAzm] [kl] [Tf] ++</p>
531-Ts	<p>يرتبط التوحد بعجز الجهاز العصبي</p> <p>yrtbT AltwHd bEjz AljhAz AlESby</p> <p>[التوحد] [علاقة] [شلل] [الجهاز العصبي]</p> <p>[AltwHd] [ElAqp] [\$ll] [AljhAz AlESby]</p> <p>[التوحد] [مشكلة] [السبب] [فـعجز] [الجهاز العصبي]</p> <p>[AltwHd] [m\$klp] [Alsbb] f-[Ejz] [AljhAz AlESby]</p>
532-Ts	<p>أهم صفات التوحد هي الهدوء</p> <p>>hm SfAt AltwHd hy Alhdw'</p> <p>[الهدوء] [أهم] [صفة] ++ [التوحد]</p> <p>[Alhdw'] [>hm] [Sfp] ++ [AltwHd]</p> <p>[أهم] [صفة] ++ [التوحد] [الهدوء]</p> <p>[Ahm] [Sfp] ++ [AltwHd] [Alhdw']</p>
533-Ts	<p>التورم ناتج عن مرض السكري</p> <p>Altwrn nAtj En mrD Alskry</p>

	<p>[الورم] [سبب] [مرض] [السكري] [Alwrn] [sbb] [mrD] [Alskry] [ورم] [السبب] [مرض] [سكري] [wrn] [Alsbb] [mrD] [skry]</p>
534-Ts	<p>أظهرت الفحوصات وجود ورم في القلب >Zhrt AlfHwSAAt wjwd wrm fy Alqlb [نتيجة] [الفحص] ++ [ورم] [في] [القلب] [ntyjp] [AlfHS] ++ [wrn] [fy] [Alqlb] [فحص] [في] [ورم] [في] [القلب] [fHS] [fy] [wrn] [fy] [Alqlb]</p>
535-Ts	<p>تسبب مشاكل الرئتين تورم الجسم tsbb m\$Akl Alr}tyn twrm Aljism [الرئتان] [مشكلة] ++ [سبب] [ورم] [الجسم] [Alr}tAn] [m\$klp] ++ f-[sbb] [wrn] [Aljism] [مشكلة] [الرئتان] [مسئول] [ورم] [الجسم] [m\$klp] [Alr}tAn] [ms}wl] [wrn] [Aljism]</p>
536-Ts	<p>تسبب الحادث في جرح الساق tsbb AlHAdv fy jrH AlsAq [الحادث] [ف] [سبب] [جرح] [في] [الساق] [AlHAdv] f-[sbb] [jrH] [fy] [AlsAq] [قبل] [حادث] [ف] [سبب] [جرح] [الساق] [qbl] [HAdv] f-[sbb] [jrH] [AlsAq]</p>
537-Ts	<p>يؤلمني الجرح الذي في رأسي y&lmny AljrH Al*y fy r>sy [الان] [أنا] [رأس] [جرح] [في] [ألم] [AlAn] [>nA] [r>s] [jrH] [fy] [>lm] [الان] [انا] [في] [ألم] [جرح] [في] [الرأس] [AlAn] [AnA] [fy] [Alm] [jrH] [fy] [Alr>s]</p>
538-Ts	<p>هل يوجد جرح في رأسك؟ hl ywjd jrH fy r>sk? [؟] [أنت] [في] [جرح] [في] [الرأس] [هل] [?] [>nt] [fy] [jrH] [fy] [Alr>s] [hl] [أنت] [في] [جرح] [في] [الراس] [؟] [Ant] [fy] [jrH] [fy] [AlrAs] [?]</p>
539-Ts	<p>الجرح الذي في الجمجمة كبير AljrH Al*y fy Aljmmj kbyr</p>

	<p>[الجرح] [في] [الجمجمة] [كبير]</p> <p>[AljrH] [fy] [Aljmjmp] [kbyr]</p> <p>[جرح] [في] [الجمجمة] [كبير]</p> <p>[jrH] [fy] [Aljmjmp] [kbyr]</p>
540-Ts	<p>يعتمد الجهاز التنفسي على القصبة الهوائية</p> <p>yEtmd AljhAz Altnfsy ElY AlqSbp AlhWA}yp</p> <p>[الجهاز التنفسي] [ف] [ماجة] [القصبة الهوائية]</p> <p>[AljhAz Altnfsy] f-[HAjp] [AlqSbp AlhWA}yp]</p> <p>[الجهاز] [التنفسي] [ف] [اعتماد] [على] [القصبة الهوائية]</p> <p>[AljhAz] [Altnfsy] f-[AEtmAd] [ElY] [AlqSbp AlhWA}yp]</p>
541-Ts	<p>يمر هواء الشهيق إلى جهاز التنفس</p> <p>ymr hwA' Al\$hyq <IY jhAz Altnfs</p> <p>[هواء] [الشهيقي] [ف] [مرور] [إلى] [جهاز] [التنفسي]</p> <p>[hwA'] [Al\$hyq] f-[mrwr] [<IY] [jhAz] [Altnfs]</p> <p>[هواء] [شهيقي] [ف] [دخول] [جهاز تنفسي]</p> <p>[hwA'] [\$hyq] f-[dxwl] [jhAz tnfsy]</p>
542-Ts	<p>يتوفر جهاز قياس الضغط في الصيدلية</p> <p>ytwfr jhAz qyAs AlDgT fy AlSydlyp</p> <p>[جهاز قياس الضغط] [ف] [في] [الصيدلية]</p> <p>[jhAz qyAs AlDgT] f-[wjwd] [fy] [AlSydlyp]</p> <p>[جهاز قياس الضغط] [ف] [في] [الصيدلية]</p> <p>[jhAz qyAs AlDgT] f-[wjwd] [fy] [AlSydlyp]</p>
543-Ts	<p>سنحتاج المنظار لفحص الجهاز الهضمي</p> <p>snHtAj AlmnZAr lfHS AljhAz AlhDmy</p> <p>[قريباً] [نحن] [ف] [ماجة] [المنظار] [سبب] [فحص] [الجهاز الهضمي]</p> <p>[qrybA] [nHn] f-[HAjp] [AlmnZAr] [sbb] [fHS] [AljhAz lhDmy]</p> <p>[قريباً] [لازم] [عمل] [منظار] [جهاز الهضمي]</p> <p>[qrybA] [lAzm] [Eml] [mnZAr] [jhAz AlhDmy]</p>
544-Ts	<p>تسبب الحريق في حروق شديدة</p> <p>tsbb AlHryq fy Hrwq \$dydp</p> <p>[قبل] [الحريق] [ف] [سبب] [حرق] ++ [قوي]</p> <p>[qbl] [AlHryq] f-[sbb] [Hrq] ++ [qwy]</p> <p>[قبل] [الحريق] [مسئول] [حرق] ++ [شديدة]</p> <p>[qbl] [AlHryq] [ms}wl] [Hrq] ++ [\$dydp]</p>
545-Ts	<p>يعالج قسم الطوارئ الحروق</p> <p>yEAlj qsm AlTwAr} AlHrwq</p> <p>[قسم] [الطوارئ] [ف] [علاج] [الحرق] ++</p> <p>[qsm] [AlTwAr}] f-[ElAj] [AlHrq] ++</p>

	<p>[في] [علاج] [حرق] ++ [عند] [قسم] [الطوارئ] [fy] [ElAj] [Hrq] ++ [End] [qsm] [AlTwAr]}</p>
546-Ts	<p>يعاني المريض من حكة نتيجة الإصابة yEAny AlmryD mn Hkp ntyjp Al<SAbp [مريض] [حكة] [السبب] [جرح] [mryD] [Hkp] [Alsbb] [jrH] [مريض] [في] [حكة] [السبب] [إصابة] [mryD] [fy] [Hkp] [Alsbb] [<SAbp]</p>
547-Ts	<p>المدمن يكثر من حك جلده Almdmn ykvr mn Hk jldh [المدمن] [كثير] [حك] [الجلد] [Almdmn] [kyvr] [Hk] [Aljld] [مدمن] [في] [حكة] [دائما] [mdmn] [fy] [Hkp] [dA}mA]</p>
548-Ts	<p>الصم ليس لديهم كل الحواس الخمس AlSm lys ldyhm kl AlHwAs Alxms [الصم] [حواس خمس] ف[موجود] [لا] [AlSm] [HwAs xms] f-[mwjwd] [lA] [اصم] [ناقص] [حواس خمس] [ASm] [nAqS] [HwAs xms]</p>
549-Ts	<p>يؤثر الإشعاع على الحواس الخمس y&vr Al<\$EAE ElY AlHwAs Alxms [الإشعاع] ف[تأثير] [على] [الحواس الخمس] [Al<\$EAE] f-[tAvyr] [ElY] [AlHwAs Alxms] [اشعه] [في] [مشكلة] [حواس خمس] [A\$Eh] [fy] [m\$klp] [HwAs xms]</p>
550-Ts	<p>وصف لك الطبيب دواء من الصيدلية wSf lk AlTbyb dwA' mn AlSydlyp [قبل] [الطبيب] ف[كتب] [لك] [علاج] [من] [الصيدلية] [qbl] [AlTbyb] f-[ktb] [lk] [ElAj] [mn] [AlSydlyp] [طبيب] ف[كتب] [لك] [دواء] [من] [الصيدلية] [Tbyb] f-[ktb] [lk] [dwA'] [mn] [AlSydlyp]</p>
551-Ts	<p>يؤثر تلوث الهواء على الرئتين y&vr tlwv Alhwa' ElY Alr}tyn [تلوث] [الهواء] ف[تأثير] [على] [الرئتان] [tlwv] [Alhwa'] f-[tAvyr] [ElY] [Alr}tAn] [تلوث] [الهواء] [مسئول] [مشكلة] [رئتان] [tlwv] [Alhwa'] [ms}wl] [m\$klp] [r}tAn]</p>

552-Ts	<p>ينتشر الزكام بكثرة في الشتاء ynt\$r AlzkAm bkvrp fy Al\$tA' [الزكام] ف[انتشار] [كثير] [في] [الشتاء] [AlzkAm] f-[Ant\$Ar] [kvyr] [fy] [Al\$tA'] [زكام] ف[انتشار] [كثير] [في] [فصل الشتاء] [zkAm] f-[Ant\$Ar] [kvyr] [fy] [fSl Al\$tA']</p>
553-Ts	<p>السمين أكثر عرضة للسكتة القلبية Alsmyn >kvr ErDp llsktp Alqlbyp [السمين] [ممكن] [السكتة القلبية] [كثير] [Alsmyn] [mmkn] [Alsktp Alqlbyp] [kvyr] [سمين] [في] [سكتة قلبية] [smyn] [fy] [sktp qlbyp]</p>
554-Ts	<p>خذ الدواء لتجنب السكتة القلبية x* AldwA' ltjnb Alsktp Alqlbyp [انت] ف[اخذ] [العلاج] [السبب] [السكتة] [القلبية] [لا] [Ant] f-[Ax*] [AlElAj] [Alsbb] [Alsktp] [Alqlbyp] [lA] [انت] [لازم] [اخذ] [دواء] [السبب] [منع] [سكتة] [قلبية] [Ant] [lAzm] [Ax*] [dwA'] [Alsbb] [mnE] [sktp] [qlbyp]</p>
555-Ts	<p>يصاب القلب غالباً بالسكتة القلبية ySAb Alqlb gAlbA bAlsktp Alqlbyp [القلب] ف[مصاب] [غالباً] [سكتة قلبية] [Alqlb] f-[mSAb] [gAlbA] [sktp qlbyp] [قلب] [ممكن] [كثير] [سكتة قلبية] [qlb] [mmkn] [kvyr] [sktp qlbyp]</p>
556-Ts	<p>يستخدم ضعاف السمع سماعة أذن ystxdm DEAf AlsmE smAEp >*n [ضعيف السمع] ++ ف[استخدم] [سماعة أذن] [DEyf AlsmE] ++ f-[Astxdm] [smAEp >*n] [ضعيف السمع] ف[استخدم] [سماعة الاذن] [DEyf AlsmE] f-[Astxdm] [smAEh AlA*n]</p>
557-Ts	<p>إنزع سماعة الأذن عند الاستحمام <nzE smAEp Al>*n End AlAstHmAm [وقت] [الاستحمام] [أنت] ف[إزالة] [سماعة أذن] [wqt] [AlAstHmAm] [>nt] f-[AzAlp] [smAEp >*n] [لازم] ف[إزالة] [سماعة الاذن] [وقت] [استحمام] [lAzm] f-[AzAlp] [smAEh AlA*n] [wqt] [AstHmAm]</p>

558-Ts	يسيل الدم من تحت الشاش ysyl Aldm mn tHt Al\$A\$ [الان] [الدم] ف[سيلان] [تحت] [الشاش] [AlAn] [Aldm] f-[sylAn] [tHt] [Al\$A\$] [دم] [في] ف[نزيف] [تحت] [الشاش] [dm] [fy] f-[nzyf] [tHt] [Al\$A\$]
559-Ts	أريد استبدال الشاش >ryd AstbdAl Al\$A\$ [أنا] ف[ارادة] [شاش] [بدل] [>nA] f-[ArAdp] [\$A\$] [bdl] [انا] ف[حب] [تبدیل] [شاش] [AnA] f-[Hb] [tbdl] [\$A\$]
560-Ts	اصبح الشاش ملوث ASbH Al\$A\$ mlwv [الشاش] [ملوث] [Al\$A\$] [mlwv] [الشاش] [ملوث] [Al\$A\$] [mlwv]
561-Ts	يؤدي الشلل الدماغي إلى الموت y&dy Al\$ll AldmAg y <ly Almwt [الشلل الدماغي] [سبب] [موت] [Al\$ll AldmAg y] [sbb] [mwt] [الشلل الدماغي] [ممكن] [السبب] [موت] [Al\$ll AldmAg y] [mmkn] [Alsbb] [mwt]
562-Ts	تسببت السكتة القلبية في شلل نصفي tsbbt Alsktp Alqlbyp fy \$ll nSfy [قبل] [السكتة القلبية] ف[سبب] [الشلل النصفي] [qbl] [Alsktp Alqlbyp] f-[sbb] [Al\$ll AlnSfy] [السكتة القلبية] [مسئول] [الشلل النصفي] [Alskth Alqlbyp] [ms}wl] [Al\$ll AlnSfy]
563-Ts	متى أصبت بالشلل النصفي؟ mtY >Sbt bAl\$ll AlnSfy? [؟] [أنت] ف[مرض] [شلل نصفي] [متى] [?] [>nt] f-[mrD] [\$ll nSfy] [mtY] [انت] [متى] ف[إصابة] [شلل نصفي] [؟] [Ant] [mtY] f-[<SAbp] [\$ll nSfy] [?]

564-Ts	<p>الصداع من أعراض الزكام AlSdAE mn >ErAD AlzkAm [الزكام] [سبب] [الصداع] [AlzkAm] [sbb] [AlSdAE] [الصداع] [السبب] [الزكام] [AlSdAE] [Alsbb] [AlzkAm]</p>
565-Ts	<p>تتأخر صورة الأشعة إيجابية ntA}j Swrp Al>\$Ep <yjAbyp [صورة الأشعة] [نتيجة] ++ [إيجابي] [Swrp Al>\$Ep] [ntyjp] ++ [AyjAby] [انت] [صورة اشعة] [إيجابي] [Ant] [Swp A\$Ep] [<yjAby]</p>
566-Ts	<p>اذهب للصيدلية لأخذ العلاج A*hb llSydlyp l>x* AlElAj [أنت] [فذهب] [إلى] [الصيدلية] [السبب] [فأخذ] [علاج] [>nt] f-[*hAb] [<ly] [AlSydlyp] [Alsbb] f-[>x*] [ElAj] [انت] [فذهب] [الصيدلية] [فأخذ] [علاج] [Ant] f-[*hAb] [AlSydlyp] f-[Ax*] [ElAj]</p>
567-Ts	<p>يسبب التهاب الكبد العدوى ysbb AlthAb Alkbd AlEdwY [التهاب] [الكبد] [فبسبب] [العدوى] [AlthAb] [Alkbd] f-[sbb] [AlEdwY] [التهاب] [الكبد] [في] [عدوى] [AlthAb] [Alkbd] [fy] [EdwY]</p>
568-Ts	<p>ينتقل مرض الإيدز بالعدوى yntql mrD Al<ydz bAlEdwY [مرض] [الإيدز] [فنتقل] [عدوى] [mrD] [Al<ydz] f-[nql] [EdwY] [ايدز] [فنتقل] [عدوى] [Aydz] f-[nql] [EdwY]</p>
569-Ts	<p>تنتقل البكتريا بالعدوى tntql AlbktryA bAlEdwY [البكتيريا] [فنتقل] [العدوى] [AlbktryA] f-[nql] [AlEdwY] [بكتريا] [فنتقل] [عدوى] [bktryA] f-[nql] [EdwY]</p>

570-Ts	<p>يزيل الطيب العصب لإزالة الألم yzyl AlTbyb AlESb l<zAlp Al>lm [الطيب] [فإزالة] [العصب] [سبب] [إزالة] [ألم] [AlTbyb] f-[AzAlp] [AlESb] [sbb] [<zAlp] [>lm] [طيب] [فإزالة] [عصب] [السبب] [وقف] [ألم] [Tbyb] f-<zAlp [ESb] [Alsbb] [wqf] [Alm]</p>
571-Ts	<p>الرياضة مهمة لتحريك الأعصاب AlryADp mhmp ltHryk Al>ESAb [الرياضة] [مهم] [السبب] [فحركة] [العصب] ++ [AlryADp] [mhm] [Alsbb] f-[Hrkp] [AlESb] ++ [رياضة] [مهم] [حركة] [العصب] ++ [ryADp] [mhm] [Hrkp] [AlESb] ++</p>
572-Ts	<p>يساعد الدواء في تنشيط الأعصاب ysAEd AldwA' fy tn\$yT Al>ESAb [العلاج] [فمساعدة] [تنشيط] [العصب] ++ [AlElAj] f-[msAEdp] [tn\$yT] [AlESb] ++ [دواء] [مسئول] [تنشيط] [العصب] ++ [dwA'] [ms}wl] [tn\$yT] [AlESb] ++</p>
573-Ts	<p>يساعد الجري في تحريك العضلة ysAEd Aljry fy tHryk AlEDlp [الجري] [فمساعدة] [حركة] [العضلة] [Aljry] f-[msAEdp] [Hrkp] [AlEDlp] [الجري] [فائدة] [حركة] [عضلة] [Aljry] [fA}dp] [Hrkp] [EDlp]</p>
574-Ts	<p>ترتبط القدم بمجموعة من الأعصاب trtbT Alqdm bmjmwEp mn Al>ESAb [القدم] [علاقة] [عصب] ++ [Alqdm] [ElAqp] [ESb] ++ [القدم] [في] [عصب] ++ [Alqdm] [fy] [ESb] ++</p>
575-Ts	<p>العضلات مهمة لتحريك الجسم AlEDlAt mhmp ltHryk Aljsm [العضلة] ++ [مهم] [السبب] [حركة] [الجسم] [AlEDlp] ++ [mhm] [Alsbb] [Hrkp] [Aljsm] [العضلة] ++ [مهم] [حركة] [الجسم] [AlEDlp] ++ [mhm] [Hrkp] [Aljsm]</p>

576-Ts	<p>يتم فحص النظر في عيادة العيون ytm fHS AlnZr fy EyAdp AlEywn [عمل] [فحص النظر] [في] [عيادة] [العيون] [Eml] [fHS AlnZr] [fy] [EyAdp] [AlEywn] [عمل] [فحص النظر] [في] [عيادة] [العيون] [Eml] [fHS AlnZr] [fy] [EyAdp] [AlEywn]</p>
577-Ts	<p>استخدم قطر العيون قبل فحص النظر Astxdm qTr AlEywn qbl fHS AlnZr [أنت] [ف] [استخدم] [قطر] [العيون] [قبل] [فحص] [النظر] [>nt] f-[Astxdm] [qTr] [AlEywn] [qbl] [fHS] [AlnZr] [لازم] [عمل] [قطر] [عيون] [قبل] [فحص النظر] [lAzm] [Eml] [qTr] [Eywn] [qbl] [fHS AlnZr]</p>
578-Ts	<p>مر الهواء عبر القصبة الهوائية ymr Alhwa' Ebr AlqSbp Alhwa}yp [الهواء] [ف] [دخول] [عبر] [القصبة الهوائية] [Alhwa'] f-[dxwl] [Ebr] [AlqSbp Alhwa}yp] [هواء] [ف] [دخول] [عبر] [القصبة الهوائية] [hwa'] f-[dxwl] [Ebr] [AlqSbp Alhwa}yp]</p>
579-Ts	<p>يعاني القفص الصدري من كسور yEAny AlqfS AlSdry mn kswr [القفص الصدري] [مشكلة] [كسر] ++ [AlqfS AlSdry] [m\$klp] [ksr] ++ [القفص الصدري] [في] [كسر] ++ [AlqfS AlSdry] [fy] [ksr] ++</p>
580-Ts	<p>القفص الصدري متصل بالعمود الفقري AlqfS AlSdry mtSl bAlEmwd Alfqry [القفص الصدري] [متصل] [العمود الفقري] [AlqfS AlSdry] [mtSl] [AlEmwd Alfqry] [القفص الصدري] [متصل] [من] [العمود الفقري] [AlqfS AlSdry] [mtSl] [mn] [AlEmwd Alfqry]</p>
581-Ts	<p>تصيب السكتة القلبية غالباً كبار العمر tSyb Alsktp Alqlbyp gAlbA kbAr AlEmr [السكتة القلبية] [ف] [إصابة] [غالباً] [كبير] [العمر] [Alsktp Alqlbyp] f-[ASAbp] [gAlbA] [kbyr] [AlEmr] [السكتة القلبية] [مرض] [كبير] [عمر] [Alsktp Alqlbyp] [mrD] [kbyr] [Emr]</p>
582-Ts	<p>يقوم القلب بضخ الدم إلى الدماغ</p>

	<p>yqwm Alqlb bDx Aldm <IY AldmAg [القلب] [فرفع] [الدم] [إلى] [الدماغ] [Alqlb] f-[rfE] [Aldm] [<IY] [AldmAg] [القلب] [عمل] [فرفع] [الدم] [إلى] [الدماغ] [Alqlb] [Eml] f-[rfE] [Aldm] [AIY] [AldmAg]</p>
583-Ts	<p>يجب عمل فحص القلب yjb Eml fHS Alqlb [لازم] [عمل] [فحص] [القلب] [lAzm] [Eml] [fHS] [Alqlb] [لازم] [عمل] [فحص] [قلب] [lAzm] [Eml] [fHS] [qlb]</p>
584-Ts	<p>يقوم الكبد بامتصاص السموم من الجسم yqwm Alkbd bAmtSAS Alsmwm mn Aljism [الكبد] [فامتصاص] [السم] ++ [من] [الجسم] [Alkbd] f-[AmtSAS] [Alsm] ++ [mn] [Aljism] [الكبد] [فعمل] [امتصاص] [سم] [من] [الجسم] [Alkbd] f-[Eml] [AmtSAS] [sm] [mn] [Aljism]</p>
585-Ts	<p>وصف لك الطبيب فيتامين للكبد wSf lk AlTbyb fytAmyn llkbd [قبل] [فكتب] [الطبيب] [لك] [فيتامين] [الكبد] [qlb] f-[ktb] [AlTbyb] [lk] [fytAmyn] [Alkbd] [طبيب] [فكتب] [لك] [فيتامين] [سبب] [لكبد] [Tbyb] f-[ktb] [lk] [fytAmyn] [sbb] [llkbd]</p>
586-Ts	<p>يتم تخدير المريض بواسطة البنج ytm txdyr AlmryD bwAsTp Albni [المريض] [ف تخدير] [بواسطة] [البنج] [AlmryD] f-[txdyr] [bwAsTp] [Albni] [مريض] [في] [ف تخدير] [بنج] [mryD] [fy] f-[txdyr] [bni]</p>
587-Ts	<p>لا ينتقل الإيدز عن طريق السلام باليد lA yntql Al<ydz En Tryq AlslAm bAlyd [الإيدز] [فنتقل] [لا] [سلام] [اليد] [Al<ydz] f-[nql] [lA] [slAm] [Alyd] [ايدز] [فنتقل] [لا] [سلام] [يد] [Ayd] f-[nql] [lA] [slAm] [yd]</p>
588-Ts	<p>معظم مدمني المخدرات مصابون بالإيدز mEZm mdmny AlmxdrAt mSAbwn bAl<ydz [كثير] [مدمن] [المخدرات] [مريض] [إيدز]</p>

	<p>[kvyr] [mdmn] [AlmxdrAt] [mryD] [<ydz] [كثير] [مدمن] [مخدرات] [في] [مرض] [ايدز] [kvyr] [mdmn] [mxdrAt] [fy] [mrD] [Aydz]</p>
589-Ts	<p>خرج المريض من المستشفى بخير xrj AlmryD mn Almst\$fY bxyr [قبل] [المريض] [خرج] [من] [المستشفى] [بخير] [qbl] [AlmryD] [xrj] [mn] [Almst\$fY] [bxyr] [مريض] [خرج] [من] [المستشفى] [بخير] [mryD] [xrj] [mn] [Almst\$fY] [bxyr]</p>
590-Ts	<p>يتسبب الإيدز بنقص المناعة ytsbb Al<ydz bnqS AlmnAEp [الإيدز] [ف] [سبب] [نقص المناعة] [Al<ydz] f-[sbb] [nqS AlmnAEp] [ايدز] [مسئول] [نقص المناعة] [Aydz] [ms}wl] [nqS AlmnAEp]</p>
591-Ts	<p>يساعد فحص الجنين على اكتشاف المنغولي ysAEd fHS Aljnyn ELY Akt\$Af Almngwly [فحص] [الجنين] [ف] [مساعدة] [معرفة] [منغولي] [fHS] [Aljnyn] f-[msAEdp] [mErfp] [mngwly] [فحص] [الجنين] [ممکن] [مساعدة] [إذا] [في] [منغولي] [fHS] [Aljnyn] [mmkn] [msAEdp] [A*A] [fy] [mngwly]</p>
592-Ts	<p>يعاني ابنك من إعاقة سمعية yEAny Abnk mn <EAqp smEyp [أنت] [ابن] [مشكلة] [إعاقة سمعية] [>nt] [Abn] [m\$klp] [<EAqp smEyp] [انت] [ابن] [في] [إعاقة سمعية] [Ant] [Abn] [fy] [<EAqp smEyp]</p>
593-Ts	<p>انتشرت الحكة في جسمي منذ أسبوع Ant\$rt AlHkp fy jsmy mn* >sbwE [قبل] [أسبوع] [الحكة] [ف] [نشر] [في] [جسم] [أنا] [qbl] [>sbwE] [AlHkp] f-[n\$R] [fy] [jsm] [>nA] [أنا] [في] [حكة] [جسم] [كامل] [منذ] [اسبوع] [AnA] [fy] [Hkp] [jsm] [kAml] [mn*] [AsbwE]</p>
594-Ts	<p>التهاب البلعوم ناتج عن ورم AlthAb AlblEwm nAtj En wrm [التهاب] [البلعوم] [السبب] [ورم] [AlthAb] [AlblEwm] [Alsbb] [worm]</p>

	<p>[التهاب] [البلعوم] [السبب] [ورم] [AlthAb] [AlblEwm] [Alsbb] [wrm]</p>
595-Ts	<p>سيتم تطعيم الرضيع بعد أسبوع sytm tTEym AlrDyE bEd >sbwE [أسبوع] [بعد] [رضيع] [تطعيم] [>sbwE] [bEd] [rDyE] [tTEym] [رضيع] [تطعيم] [بعد] [أسبوع] [rDyE] [tTEym] [bEd] [AsbwE]</p>
596-Ts	<p>تتكون جمجمة الإنسان من ٢٢ عظمة ttkwn jmjmp Al<nsAn mn 22 EZmp [جمجمة] [الإنسان] [ف]تكون [من] [٢٢] [عظمة] [jmjmp] [Al<nsAn] f-[tkwn] [mn] [22] [EZmp] [الجمجمة] [ف]تكون [من] [عظم] [كم] [٢٢] [عظمة] [Aljmjmp] f-[tkwn] [mn] [EZm] [km] [22] [EZmp]</p>
597-Ts	<p>جمجمة الرضيع صغيرة jmjmp AlrDyE Sgyrp [جمجمة] [الرضيع] [صغيرة] [jmjmp] [AlrDyE] [Sgyrp] [رضيع] [جمجمة] [صغير] [rDyE] [jmjmp] [Sgyr]</p>
598-Ts	<p>ارتفاع الضغط يؤثر على الحواس الخمس ArtfAE AlDgT y&vr ElY AlHwAs Alxms [ارتفاع] [الضغط] [ف]تأثير [على] [الحواس الخمس] [ArtfAE] [AlDgT] f-[t>vyr] [ElY] [AlHwAs Alxms] [ارتفاع] [الضغط] [في] [تأثير] [الحواس الخمس] [ArtfAE] [AlDgT] [fy] [t>vyr] [AlHwAs Alxms]</p>
599-Ts	<p>لا تزيل الشريط اللاصق من العملية lA tzyl Al\$ryT AllASq mn AlEmlyp [ممنوع] [أنت] [ف]إزالة [الشريط اللاصق] [من] [العملية] [mmnwE] [>nt] f-[AzAlp] [Al\$ryT AllASq] [mn] [AlEmlyp] [ممنوع] [نزع] [شريط لاصق] [من] [العملية] [mmnwE] [nzE] [\$ryT lASq] [mn] [AlEmlyp]</p>
600-Ts	<p>قد يسبب لك المخدر غثيان qd ysbb lk Almxdr gvyAn [المخدر] [ممكن] [ف]سبب [أنت] [غثيان] [Almxdr] [mmkn] f-[sbb] [Ant] [gvyAn] [ممكن] [مخدر] [السبب] [غثيان]</p>

	[mmkn] [mxdr] [Alsbb] [gvyAn]
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APPENDIX B

VERB AND SUBJECT AGREEMENT ALGORITHM

This algorithm makes the verb agrees with subject in gender and number:-

Algorithm 3 Make the verb agrees with subject in gender and number

Require: *presentVerb*: present verb of the masculine 3rd singular person,
pastVerb: past verb of the masculine 3rd singular person, *targetTense*: target tense of the verb

Ensure: *modifiedVerb*: verb agrees with the subject in gender and number

```
1: switch targetTense do
2:   case past
3:     switch subject do
4:       case 1st person ▷ Speaker
5:         switch Number do ▷ Verb target number
6:           case singular
7:             modifiedVerb = P + ت
8:           case dual or plural
9:             modifiedVerb = P + نا
10:        case 2nd person ▷ Addressee
11:          switch Number do
12:            case singular
13:              modifiedVerb = P + ت
14:            case dual
15:              modifiedVerb = P + تما
16:            case plural
17:              if gender is masculine then
18:                modifiedVerb = P + تم
19:              else
20:                modifiedVerb = P + تن
21:              end if
22:          case 3rd person ▷ He or She or it
23:            switch Number do
24:              case singular
25:                if gender is masculine then ▷ Verb target gender
26:                  modifiedVerb = P
27:                else
28:                  modifiedVerb = P + ت
29:                end if
30:              case dual
31:                if gender is masculine then
32:                  modifiedVerb = P + ا
33:                else
34:                  modifiedVerb = P + تا
35:                end if
```

```

36:         case plural
37:             if gender is masculine then
38:                  $modifiedVerb = P + وَا$ 
39:             else
40:                  $modifiedVerb = P + ن$ 
41:             end if
42:     case present
43:         switch subject do
44:             case 1st person
45:                 switch Number do
46:                     case singular
47:                          $modifiedVerb = اَ + verbWithNoY$ 
48:                     case dual or plural
49:                          $modifiedVerb = ن + verbWithNoY$ 
50:                 case 2nd person
51:                     switch Number do
52:                         case singular
53:                             if gender is masculine then
54:                                  $modifiedVerb = ت + verbWithNoY$ 
55:                             else
56:                                  $modifiedVerb = ت + verbWithNoY + ين$ 
57:                             end if
58:                         case dual
59:                              $modifiedVerb = ت + verbWithNoY + ان$ 
60:                     case plural
61:                         if gender is masculine then
62:                              $modifiedVerb = ت + verbWithNoY + ون$ 
63:                         else
64:                              $modifiedVerb = ت + verbWithNoY + ن$ 
65:                         end if
66:                 case 3rd person
67:                     switch Number do
68:                         case singular
69:                             if gender is masculine then
70:                                  $modifiedVerb = presentVerb$ 
71:                             else
72:                                  $modifiedVerb = ت + verbWithNoY$ 
73:                             end if

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74:         case dual
75:             if gender is masculine then
76:                 modifiedVerb = presentVerb + ا
77:             else
78:                 modifiedVerb = ت + verbWithNoY + ان
79:             end if
80:         case plural
81:             if gender is masculine then
82:                 modifiedVerb = verbWithNoY + ون
83:             else
84:                 modifiedVerb = ت + verbWithNoY + ن
85:             end if
86:     case future
87:         switch subject do
88:             case 1st person
89:                 switch Number do
90:                     case singular
91:                         modifiedVerb = سا + verbWithNoY
92:                     case dual or plural
93:                         modifiedVerb = سن + verbWithNoY
94:                 case 2nd person
95:                     switch Number do
96:                         case singular
97:                             if gender is masculine then
98:                                 modifiedVerb = ست + verbWithNoY
99:                             else
100:                                modifiedVerb = ست + verbWithNoY + ين
101:                            end if
102:                         case dual
103:                            modifiedVerb = ست + verbWithNoY + ان
104:                        case plural
105:                            if gender is masculine then
106:                                modifiedVerb = ست + verbWithNoY + ون
107:                            else
108:                                modifiedVerb = ست + verbWithNoY + ن
109:                            end if

```

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110:      case 3rd person
111:      switch Number do
112:      case singular
113:      if gender is masculine then
114:      modifiedVerb = س + presentVerb
115:      else
116:      modifiedVerb = ست + verbWithNoY
117:      end if
118:      case dual
119:      if gender is masculine then
120:      modifiedVerb = س + presentVerb + ا
121:      else
122:      modifiedVerb = ست + verbWithNoY + ان
123:      end if
124:      case plural
125:      if gender is masculine then
126:      modifiedVerb = س + verbWithNoY + ون
127:      else
128:      modifiedVerb = ست + presentVerb + ن
129:      end if

```

Vitae

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- **Patents**
 - Luqman, Hamzah Abdullah, and Sabri Abdullah Mohammed. "Method and apparatus for Arabic and Farsi font recognition." U.S. Patent No. US9014481 B1. 21 Apr. 2015.
- **Journal papers**
 - Luqman, Hamzah, Sabri A. Mahmoud, and Sameh Awaida. "Arabic and Farsi Font Recognition: Survey." International Journal of Pattern Recognition and Artificial Intelligence 29.01: 1553002. (2015).
 - Luqman, Hamzah, Sabri A. Mahmoud, and Sameh Awaida. "KAFD Arabic font database." Pattern Recognition 47.6: 2231-2240. (2014).
 - El-Attar, Mohamed, Hamza Luqman, Peter KARPATI, Guttorm Sindre, and Andreas Opdahl. "Extending the UML Statecharts Notation to Model Security Aspects." IEEE Transactions on Software Engineering, Volume:41, Issue: 7. (2015).

- Hamzah Luqman, and Sabri Mahmoud. Automatic translation of Arabic text to Arabic sign language. *Universal Access in the Information Society journal*, (2018). Accepted.
- Ala Sidigi, Hamzah Luqman, and Sabri Mahmoud. Arabic sign language recognition using vision and hand tracking features with HMM. *International Journal of Intelligent Systems Technologies and Applications*, (2018). Accepted.
- Sabri A. Mahmoud, Hamzah Luqman, Baligh M. Al-Helali, Galal Bin-Makhashen, and Mohammad Tanvir Parvez. "Online-KHATT: An Online Open-Vocabulary Arabic Text Database". *The Open Cybernetics & Systemics Journal*, (2018). Accepted.
- Sidig A..I., Luqman H., Mahmoud S.A. KArSL: Arabic Sign language database. Submitted to *Language Resources and Evaluation*, 2017.
- Helmy, Tarek, Hamdi Al-Jamimi, Bashar Ahmed, and Hamzah Luqman. "Fuzzy LogicBased Scheme for Load Balancing in Grid Services." *Journal of Software Engineering and Applications* 5, no. 12: 149. (2013).

• Book chapter

- Sidig A. I., Luqman H., Mahmoud S.A. Arabic Sign Language Recognition Using Optical Flow-Based Features and HMM. In: Saeed F., Gazem N., Patnaik S., Saed Balaid A., Mohammed F. (eds) *Recent Trends in Information and Communication Technology. IRICT 2017. Lecture Notes on Data Engineering and Communications Technologies*, vol 5. Springer, Cham (2017).

• Conference papers

- Armin Kobilica, Hamzah Luqman, and Emad Ramdan. Wavelets in the Breast Cancer Detection and Diagnosis: A Review. *The 9th IEEE GCC Conference & Exhibition, Manama, Bahrain*. (2017).
- Sidig A..I., Luqman H., Mahmoud S.A Transform-based Arabic sign language recognition. *ACLing 2017. Dubai*. (2017).
- Husni Al-Muhtaseb, and Hamzah Luqman. Post-processing optimization for Arabic optical character recognition (In Arabic). *The 5th international conference on Arabic language, Dubai*. (2016).
- Hamzah Luqman, Hassan AlKaff, and Mohamed El-Atar. Securing real-time state charts. *The Third Scientific Conference for Students in higher Education, KSA, Al-Khobar*. (2012).